Kentucky Core Academic Standards - June 2010

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Education Goals

These capacity and goal statements of the Kentucky Education Reform Act of 1990, as found in Kentucky Revised Statute (KRS) 158.645 and KRS 158.6451, are the basis for instructional programs in Kentucky public schools. All students shall have the opportunity to acquire the following capacities and learning goals:

- Communication skills necessary to function in a complex and changing civilization
- Knowledge to make economic, social and political choices
- Understanding of governmental processes as they affect the community, the state and the nation
- Sufficient self-knowledge and knowledge of their mental health and physical wellness
- Sufficient grounding in the arts to enable each student to appreciate their cultural and historical heritage
- Sufficient preparation to choose and pursue their life's work intelligently
- Skills to enable students to compete favorably with students in other states and other parts of the world

Furthermore, schools shall

- expect a high level of achievement from all students.
- develop their students' abilities to:
  - use basic communication and mathematics skills for purposes and situations they will encounter throughout their lives
  - apply core concepts and principles from mathematics, science, arts and humanities, social studies, English/language arts, health, mathematics, practical living, including, physical education, to situations they will encounter throughout their lives
  - become self-sufficient individuals
  - become responsible members of a family, work group or community as well as an effective participant in community service
  - think and solve problems in school situations and in a variety of situations they will encounter in life
  - connect and integrate experiences and new knowledge from all subject matter fields with what students have previously learned and build on past learning experiences to acquire new information through various media sources
- increase student attendance rates
- reduce dropout and retention rates
- reduce physical and mental health barriers to learning
- be measured on the proportion of students who make a successful transition to work, postsecondary education and the military

Legal Base

The following Kentucky Revised Statutes (KRS) and Kentucky Administrative Regulations (KAR) provide a legal base for this publication:

KRS 156:160 Promulgation of administrative regulations by the Kentucky Board of Education

With the advice of the Local Superintendents Advisory Council, the Kentucky Board of Education shall promulgate administrative regulations establishing standards that public school districts shall meet in student, program, service and operational performance. These regulations shall comply with the expected outcomes for students and schools set forth in KRS 158:6451.

Administrative regulations shall be promulgated for:

- Courses of study for the different grades and kinds of common schools; and
- The minimum requirements for high school graduation.

704 KAR 3:305 Minimum high school graduation requirements

This administrative regulation establishes the minimum high school graduation requirements necessary for entitlement to a public high school diploma, including the requirements for the graduating class of 2012.

704 KAR 3:303 Required Kentucky Core Academic Standards

This administrative regulation adopts into law the *Kentucky Core Academic Standards February 2010.*

Scope and Purpose

Preparation of Kentucky's students for the demands of the 21st Century requires districts and schools to prepare every student for successful transition to post-secondary education, work and the community. The Kentucky Core Academic Standards helps ensure that all students throughout Kentucky are provided with common content and have opportunities to learn at high levels. The document provides administrators, teachers, parents and other stakeholders in local school districts with a basis for establishing and/or revising standards-based curricula and instruction for public schools.

The instructional programs for Kentucky's public schools emphasize the development of students' abilities to acquire, apply and integrate knowledge, skills, and understandings in real-life contexts and to problem-solve, make decisions, and think critically and creatively. They assist students in connecting learning to the world beyond the classroom by exploring and investigating real issues and problems of communities, states, the nation, and the world. Well-designed curriculum and instruction recognizes the diversity of students and how children learn, construct knowledge and acquire skills and concepts of the disciplines. The curriculum and instruction incorporate an understanding of students' families, cultures and communities and draw on these understandings to create a rich context and environment for learning. Curriculum and instruction are culturally responsive and provide for the diversity of students to assure that all students in Kentucky public schools have the opportunity to learn (time, support, access, equity, resources, and quality educational design and practices) at high levels. Schools provide appropriate supports and accommodations to facilitate student learning and preparation for the 21st century.

The purpose of the *Kentucky Core Academic Standards* is to outline the **minimum** content standards required for all students before graduating from Kentucky public high schools. This document specifies the content standards for the required credits for high school graduation and the primary, intermediate and middle level content standards leading up to these requirements.

Schools and school districts are also responsible for coordinating curricula across grade levels and among schools within districts. A coordinated curricular approach ensures that all students have opportunities to achieve *Kentucky's Learning Goals and Academic Expectations* and the content standards. It also provides for a thoughtful continuum of content and skills across grade levels while assuring the teaching and learning of all content in the*Kentucky Core Academic Standards*. Districts and schools are accountable for making sure that each student's education program includes the minimum content standards as specified in the *Kentucky Core Academic Standards* and provides the student with the opportunity to learn the standards. Schools provide individual supports for learning that are essential for students to access the curriculum, achieve at high levels and maximize successful transition to postsecondary. Schools have the flexibility in how to organize (e.g., discipline based, integrated, interdisciplinary, applied, or occupational/technical approaches) the standards for instruction to best meet the needs of students in the schools and districts and how to deliver instruction.

Organization of the Kentucky Core Academic Standards

This document contains the following sections: Introduction, Preschool Education, Primary Education, Intermediate Education, Secondary Education with specific sections for Middle Education and High School Education, Career and Technical Education and Additional Curriculum Guidelines. Each section (e.g., Primary, Intermediate, Secondary, etc.) begins with general information followed by the minimum content standards for each content area. Each content area (i.e., mathematics, science, social studies, English Language arts, etc.) subsection begins with an introduction to the content area, followed by the charts by grade levels that specify the required minimum content that all students shall have the opportunity to learn. The content is based on Kentucky's learning goals, academic expectations, national and international standards and input from education professional organizations, teachers, administrators, higher education, the business community and parents.

Learning Goal 1 (Basic Communication and mathematics Skills) and Goal 2 (Application of Core Concepts) are cited most often within this document. These two goals provide the basic academic skills and content for what Kentucky high school graduates should know when they exit public school. However, the skills identified in the other goals are equally important. Goal 5 (Think and Solve Problems) and Goal 6 (Connect and Integrate Knowledge) provide students with strategies for lifelong learning and are embedded in the specific content areas. They are also reflected in the Inquiry and Research section for each content area.

The Academic Expectations within each of these four goals (Goals 1, 2, 5 and 6) are referenced throughout the content descriptions in the *Kentucky Core Academic Standards*.

Although Goal 3 (Developing Self-Sufficiency) and Goal 4 (Responsible Group Membership) are not being assessed on a statewide level, the Kentucky Board of Education expects all educators, school boards and councils, parents and students to give continued emphasis to the development of responsible group membership and personal self-sufficiency because of the importance of these skills and attributes in the workplace and the larger community. Goals 3 and 4 and the Academic Expectations for these goals are included below:

Goal 3: Students shall develop their abilities to become self-sufficient individuals.

Academic Expectations for Goal 3:

3.1 Students demonstrate positive growth in self-concept through appropriate tasks or projects.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
3.3 Students demonstrate the ability to be adaptable and flexible through appropriate tasks or projects.
3.4 Students demonstrate the ability to be resourceful and creative.
3.5 Students demonstrate self-control and self discipline.
3.6 Students demonstrate the ability to make decisions based on ethical values.
3.7 Students demonstrate the ability to learn on one's own.

Goal 4: Students shall develop their abilities to become responsible members of a family, work group, or community, including demonstrating effectiveness in community service.

Academic Expectations for Goal 4:

4.1 Students effectively use interpersonal skills.
4.2 Students use productive team membership skills.
4.3 Students individually demonstrate consistent, responsive, and caring behavior.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
4.5 Students demonstrate an understanding of, appreciation for, and sensitivity to a multi-cultural and world view.
4.6 Students demonstrate an open mind to alternative perspectives.

In arts and humanities, practical living/vocational studies, science and social studies, under each Big Idea are several statements of Enduring Knowledge that represent overarching generalizations and understandings linked to the Big Ideas of the Discipline. The statements of Enduring Knowledge represent the desired results for learning – the focus of the learning and what knowledge students will be able to explain or apply. They can be used to frame development of courses, units of study or lessons plans. These understandings are "enduring" in that they have one or more of the attributes listed below (adapted from Understanding by Design, Wiggins& McTighe, 1998). Enduring Understandings:

- Have enduring value to learn beyond the test, the classroom or the school year (e.g., understanding what acts of citizenship really mean)
- Are at the heart of the discipline ("doing" the subject, such as understanding use of artifacts to interpret history)
- Uncovers abstract, complex or misunderstood ideas (e.g., understanding that having liberty comes with responsibilities) and/or
- Imply that in order to master related facts and skills means having a "grasp" of the underlying concepts (e.g., identifying geographic features in order to interpret events or conflicts)

Following the section for Enduring Knowledge-Understandings are skills and concepts related both to the Big Idea and Enduring Knowledge-Understandings. The Skills and Concepts describe the ways that students will demonstrate their learning. Literacy and technology connections are embedded in this section, as appropriate to learning the skills, concepts and understandings. Schools are expected to incorporate reading, writing, Speaking, Listening and Observing, inquiry research and technology in all content areas.

English language art, the standards are organized around the following features:

- Reading and Literature: Text complexity and the growth of comprehension
- Writing and Research: Text types, grade-level focuses, and research
- Speaking and Listening: Flexible communication
- Language Development: Conventions and vocabulary

Mathematics Core Academic Standards contain several headings, each one the title of a single progression having significant presence in that particular grade level. Under each of these progression headings, there appear core standards, divided into standards describing concepts student should understand and standards describing skills students should acquire.

It is the belief of the Kentucky Board of Education that the Kentucky Core Academic Standards frames the critical standards necessary to prepare Kentucky students for successful transition to postsecondary options and the changing workplace andthe next generation of learning. Schools and districts are responsible for translating these standards into practice.

PRESCHOOL EDUCATION

Preschool Education

For many students, the preschool program is their introduction to the educational environment. Preschool education programs are available in Kentucky for all 4-year-old children who are eligible for free lunch; all 3- and 4-year-old children with disabilities, regardless of income; and other 4-year-old children as placements are available. The preschool program is designed to be developmentally appropriate for young children.

“Developmentally appropriate” is defined in Kentucky law to mean that the program focuses on the child’s physical, intellectual, social and emotional development, including interpersonal, intrapersonal and socialization skills. Intellectual skills are promoted by encouraging children to solve problems, initiate activities and learn through active explorations.

The preschool curriculum addresses early-learning standards that are integrated into a variety of activities within an environment that supports optimal development for the whole child. A major focus of the preschool program is language development – listening, speaking and becoming familiar with books. As they are developmentally ready, children begin to explore and learn about writing, letters and sounds, and mathematics concepts. Teachers promote child learning and development by embedding assessment activities within the curriculum and daily schedule.

The preschool curriculum supports a daily balance of large and small group activities, indoors and outdoors, that are designed to provide individual and group instruction to meet the needs of all children. Child-initiated and teacher-supported play is encouraged through the use of a variety of learning centers and areas in the classroom that allow students to participate in art, block building, cooking, gross motor activities, dramatic play, language arts/library, using manipulative materials, mathematics/problem solving, multimedia activities, music and science/social studies.

ELEMENTARY EDUCATION

PRIMARY EDUCATION

Primary Education

The primary program is that part of the Kentucky education system in which children are enrolled from the time they begin elementary school until they are ready to enter the fourth grade. The critical attributes of the primary program include developmentally appropriate practices, multi-age and multi-ability classrooms, continuous progress, authentic assessment, qualitative reporting methods, professional teamwork and positive parent involvement.

The primary curriculum is grounded in these critical attributes. It provides opportunities for students to learn basic skills, social behaviors (e.g., working with others, taking turns) and skills students must acquire to be successful in school (e.g., study skills, organization). Teachers use an integrated approach to curriculum and instructional design, addressing the intellectual, social, emotional, aesthetic and physical needs of young children to provide optimum learning environments.

Content charts included in this document for the primary program in arts and humanities, practical living/career studies, science and social studies are not arranged sequentially by grade. Rather, they include the minimum content students need to be successful as they transition to fourth grade.

However, in English language arts, the Core Academic Standards contain single-grade standards in my areas of kindergarten and grades 1,2, and 3. Text complexity expectations in Reading, beginning at grade 2. The standards are organized around the follow features:

- Reading and Literature: Text complexity and the growth of comprehension
- Writing and Research: Text types, grade-level focuses, and research
- Speaking and Listening: Flexible communication
- Language Development: Conventions and vocabulary

Mathematics Core Academic Standards for primary, grades 1,2, and 3 contain several headings, each one the title of a single progression having significant presence in that particular grade level. Under each of these progression headings, there appear core standards, divided into standards describing concepts student should understand and standards describing skills students should acquire. A typical progression spans a number of grades, but does not span all of primary.

PRIMARY ARTS AND HUMANITIES

Kentucky Core Academic Standards – Arts and Humanities – Primary

The arts and humanities program in the primary level centers on an exploration of the art forms of dance, drama/theatre, music and visual arts. Emphasis should be placed on exposing students to a variety of arts through active experiences in all four art forms. This exploration includes a beginning of literacy development in the arts content areas, simple analysis and critique of the arts, and active creating and performing in the arts.

Students should have the opportunity to learn about the arts in the context of creating and performing. As students create and perform, they learn that the arts are basic to human communication and that they can use the arts to communicate specific meaning through their choices in the use of various arts elements and principles of design.

The arts and humanities content standards at the primary level are directly aligned with Kentucky's broad standards called the **Academic Expectations**. The **Academic Expectations** are directly related to the *National Standards for Arts Education (1994)*.

Arts and humanities grade level content standards are organized around five “Big Ideas” that are important to the arts disciplines. The five big ideas in arts and humanities are: Structures in the Arts, Humanity in the Arts, Purposes for Creating the Arts, Processes in the Arts and Interrelationships Among the Arts. The Big Ideas are conceptual organizers for arts and humanities and are similar at each grade level to ensure students have multiple opportunities throughout their school careers to develop skills and concepts linked to each Big Idea.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of the arts and humanities. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and Concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for arts and humanities are fundamental to arts literacy and proficiency, and build on prior learning.

The three arts processes of creating, performing and responding to the arts provide a basis for deep understanding and appreciation of the arts. In the processes of creating and performing, a variety of technologies are employed, ranging from primitive technologies to cutting edge electronic and digital technologies.

Creating involves planning and creating new music, dance, drama/theatre or visual arts, or it may involve improvising in music, dance or drama/theatre. Improvising is the composing of new music, reciting/acting new dramatic material, or creating new dance movements on the spur of the moment.

Performing is limited to the performing arts of music, dance and drama/theatre. Performing involves presenting previously created works for an audience. Although the process of performing involves following a creative plan conceived by a composer, playwright or choreographer, there is still opportunity for creative interpretations in the performance.

Responding to the arts involves responses on multiple levels. The arts are a tool for communication and are capable of delivering meaning through literal and emotional content. Responding to the emotional content of artworks involves actually feeling the emotion(s) set forth by the creator. Responding can also involve intellectual analysis of works of art in regard to their design, effectiveness and quality.

Academic Expectations 2.25 and 2.26 bring forward the study of the humanities in the arts. The arts reflect time, place and society and offer a mirror to the human experience. The powerful communication qualities of the arts also enable them to be a factor that can drive the human experience. Study of historical and cultural contexts in the arts is an essential and integral part of instruction across all the art forms and across all grade levels.

Primary level students should have the opportunity to experience the arts of various cultures around the world, but specific study should focus on influences in the early history of America and the United States, specifically Native American arts, West African arts, Appalachian arts; how the arts are part of these cultures and purposes they have served in those cultures. Students will also study European arts that influenced arts in the American Colonial period.

Big Idea: Structure in the Arts

Understanding of the various structural components of the arts is critical to the development of other larger concepts in the arts. Structures that artists use include elements and principles of each art form, tools, media and subject matter that impact artistic products, and specific styles and genre that provide a context for creating works. It is the artist's choice of these structural components in the creative process that results in a distinctively expressive work. Students make choices about how to use structural organizers to create meaningful works of their own. The more students understand, the greater their ability to produce, interpret, or critique artworks from other artists, cultures and historical periods.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.23 Students analyze their own and others' artistic products and performances using accepted standards.

Primary Enduring Knowledge – Understandings

Students will understand that

- the elements of music, dance, and drama are intentionally applied in creating and performing.
- the elements and principles of design of visual art are intentionally applied in creating works of art.
- responding to or critiquing works of art involves an understanding of elements, principles and structures appropriate to each area of the arts.
- existing and emerging technologies can inspire new applications of structural components.

Primary Skills and Concepts – Music

Students will

- begin to recognize and identify elements of music (rhythm, tempo, melody, harmony, form, timbre, dynamics) using musical terminology
- use the elements of music while performing, singing, playing instruments, moving, listening, reading music, writing music, and creating music independently and with others
- listen to and explore how changing elements results in different musical effects
- recognize, describe and compare various styles of music (spirituals, game songs, folk songs, work songs, lullabies, patriotic, bluegrass)

Primary Skills and Concepts – Dance

Students will

- begin to recognize and identify elements of dance (space, time, force) and basic dance forms using dance terminology
- use the elements of dance in creating, copying and performing patterns of movement independently and with others
- observe, describe and demonstrate locomotor (e.g. walk, run, skip, gallop) and nonlocomotor (e.g. bend, stretch, twist, swing) movements

Big Idea: Structure in the Arts – Continued

Primary Skills and Concepts – Drama/Theatre
Students will

- begin to recognize and identify elements of drama (literary, technical, performance) using drama/theatre terminology
- use the elements of drama in creating and performing dramatic works independently and with others
- observe, describe and apply creative dramatics (improvisation, mimicry, pantomime, role playing and story telling) in a variety of situations
- explore a variety of dramatic works (e.g., theater, dramatic media – film, television)

Primary Skills and Concepts – Visual Arts
Students will

- begin to recognize and identify elements of art (line, shape, form, texture, color) and principles of design (emphasis, pattern, balance, contrast) using visual art terminology
- use the elements of art and principles of design in creating artworks independently and with others
- explore, describe and compare elements of art (e.g., line, shape, form, texture, primary and secondary colors, color schemes) and principles of design (e.g., focal point, pattern, balance, contrast) in two and three dimensional artworks

Big Idea: Humanity in the Arts

The arts reflect the beliefs, feelings, and ideals of those who create them. Experiencing the arts allows one to experience time, place and/or personality. By experiencing the arts of various cultures, students can actually gain insight into the beliefs, feelings and ideas of those cultures. Students also have the opportunity to experience how the arts can influence society through analysis of arts in their own lives and the arts of other cultures and historical periods. Studying the historical and cultural stylistic periods in the arts offers students an opportunity to understand the world past and present, and to learn to appreciate their own cultural heritage. Looking at the interrelationships of multiple arts disciplines across cultures and historical periods is the focus of humanities in the arts.

Academic Expectations

2.24 Students have knowledge of major works of art, music, and literature and appreciate creativity and the contributions of the arts and humanities.

2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.

2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Primary Enduring Knowledge – Understandings

Students will understand that

- the arts are powerful tools for understanding human experiences both past and present.
- the arts help us understand others' (often very different) ways of thinking, working, and expressing ourselves.
- the arts play a major role in the creation and defining of cultures and building civilizations.

Primary Skills and Concepts – Music

Students will

- begin to associate music they listen to or perform with specific cultures (Native American, Appalachian, West African); describe in simple terms how the music reflects the cultures
- begin to associate music they listen to or perform with the Colonial American period in history; describe in simple terms how the music reflects the Colonial American time period
- begin to describe the music of specific cultures using music terminology

Primary Skills and Concepts – Dance

Students will

- begin to associate dances they observe or perform with specific cultures (Native American, Appalachian, West African); describe in simple terms how dances reflect the cultures
- begin to associate dances they observe or perform with the Colonial American period in history; describe in simple terms how dances reflect the Colonial American time period
- begin to describe the dance of specific cultures using dance terminology

Primary Skills and Concepts – Drama/Theatre

Students will

- begin to associate folktales, legends, or myths they experience or perform with specific cultures (Native American, Appalachian, West African); describe in simple terms how literature and oral tradition reflect the cultures
- begin to associate folktales, legends, or myths they experience or perform with the Colonial American period in history; describe in simple terms how literature and oral tradition reflect the Colonial American time period
- begin to describe folktales, legends, or myths of specific cultures using drama/theatre terminology

Big Idea: Humanity in the Arts – Continued

Primary Skills and Concepts – Visual Arts
Students will

- begin to associate artworks they experience or create with specific cultures (Native American, Appalachian, West African); describe in simple terms how the art of these cultures reflects the cultures
- begin to associate artworks they experience or create with the Colonial American period in history; describe in simple terms how the art of the American Colonies reflects the Colonial American time period
- begin to describe artworks of specific cultures using visual art terminology

Big Idea: Purposes for Creating the Arts

The arts have played a major role throughout the history of humans. As the result of the power of the arts to communicate on a basic human level, they continue to serve a variety of purposes in society. The arts are used for artistic expression to portray specific emotions or feelings, to tell stories in a narrative manner, to imitate nature and to persuade others. The arts bring meaning to ceremonies, rituals, celebrations and commemorations. Additionally, they are used for recreation and to support recreational activities. Students experience the arts in a variety of roles through their own creations and performances and through those of others. Through their activities and observations, students learn to create arts and use them for a variety of purposes in society.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Primary Enduring Knowledge – Understandings

Students will understand that

- the arts fulfill a variety of purposes in society (e.g., to present issues and ideas, to entertain, to teach or persuade, to design, plan and beautify).
- the arts have value and significance for daily life. They provide personal fulfillment, whether in career settings, avocational pursuits, or leisure.
- the arts provide forms of nonverbal communication that can strengthen the presentation of ideas and emotions.

Primary Skills and Concepts – Music

Students will

- begin to develop an awareness of the purposes for which music is created (e.g., ceremonial, recreational, artistic expression)
- listen to and perform music created to fulfill a variety of specific purposes

Primary Skills and Concepts – Dance

Students will

- begin to develop an awareness of the purposes for which dance is created (e.g., ceremonial, recreational, artistic expression)
- observe and perform dance created to fulfill a variety of specific purposes

Primary Skills and Concepts – Drama/Theatre

Students will

- begin to develop an awareness of the purposes for which dramatic works are created (e.g., sharing the human experience, passing on tradition and culture, recreational, artistic expression)
- observe and perform dramatic works created to fulfill a variety of specific purposes

Primary Skills and Concepts – Visual Arts

Students will

- begin to develop an awareness of the purposes for which artworks are created (e.g., ceremonial, artistic expression, narrative, functional)
- create new and experience artworks designed to fulfill a variety of specific purposes

Big Idea: Processes in the Arts

There are three distinctive processes involved in the arts. These processes are creating new works, performing works for expressive purposes and responding to artworks. Each process is critical and relies on others for completion. Artists create works to express ideas, feelings or beliefs. The visual arts capture a moment in time while the performing arts (music, dance, drama/theatre) are performed for a live audience. The audience responds to the artistic expressions emotionally and intellectually based on the meaning of the work. Each process enhances understanding, abilities, and appreciation of others. Students involved in these processes over time will gain a great appreciation for the arts, for artists past and present and for the value of artistic expression.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.

Primary Enduring Knowledge – Understandings

Students will understand that

- there are three distinct processes for involvement in the arts; creating new artworks, performing works previously created and responding to artworks and performances.
- full understanding and appreciation of the arts requires some degree of involvement in all three processes.
- openness, respect for work and an understanding of how artists apply elements and principles of design in creating and performing are personal attitudes and skills that enhance enjoyment of the observer.
- existing and emerging technologies can extend the reach of the art form to new audiences.

Primary Skills and Concepts – Music

Students will

- be actively involved in creating and performing music alone and with others
- begin to learn how to use knowledge of the elements of music and music terminology to describe and critique their own performances and the performances of others
- identify possible criteria for evaluating music (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of music being performed; discuss opinions with peers in a supportive and constructive way

Primary Skills and Concepts – Dance

Students will

- be actively involved in creating and performing dance alone and with others
- begin to learn how to use knowledge of the elements of dance and dance terminology to describe and critique their own performances and the performances of others
- identify possible criteria for evaluating dance (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of dance being performed; discuss opinions with peers in a supportive and constructive way

Big Idea: Processes in the Arts – Continued

Primary Skills and Concepts – Drama/Theatre
Students will

- be actively involved in creating and performing dramatic works
- begin to learn how to use knowledge of the elements of drama and drama terminology to describe and critique their own performances and the performances of others
- identify possible criteria for evaluating dramatic works (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of dramatic works being performed; discuss opinions with peers in a supportive and constructive way

Primary Skills and Concepts – Visual Arts
Students will

- be actively involved in creating artworks
- begin to learn how to use knowledge of the elements and principles of art and art terminology to describe and critique their own work and the work of others
- identify possible criteria for evaluating visual arts (e.g., skill of artist, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of visual arts being viewed; discuss opinions with peers in a supportive and constructive way
- describe personal responses to artwork; explain why there might be different responses to specific works of art

Big Idea: Interrelationships Among the Arts

The arts share commonalities in structures, purposes, creative processes, and their ability to express ideals, feelings and emotions. Studying interrelationships among the arts enables students to get a broad view of the expressiveness of the art forms as a whole, and helps to develop a full appreciation of the arts as a mirror of human kind.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.
2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Primary Enduring Knowledge – Understandings

Students will understand that

- the arts are basic forms of human communication.
- music, dance, drama and visual art created in common cultures and/or common historical periods tend to reflect common attitudes, ideas, beliefs, and feelings.
- the arts provide forms of non-verbal communication that can strengthen the presentation of ideas and emotions.
- the modes of thinking and methods of the arts disciplines can be used to illuminate situations in other disciplines that require creative solutions.

Primary Skills and Concepts – Arts

Students will

- begin to recognize that common terms are used in various arts (e.g., tempo in dance and music)
- begin to notice communication of common themes or ideas across different art forms
- identify and explain connections between and among different art forms from the same culture or from the same time period
- begin to identify commonalities between the arts and other subjects taught in the school (e.g., observation skills in visual arts and science, historical and cultural perspectives in the arts and social studies, shape in visual art and mathematics, dance and a healthy lifestyle, fractions in music notation and mathematics, reading music and reading words, composing music and writing)
- communicate common meaning through creating and performing in the four art forms

PRIMARY AND INTERMEDIATE ENGLISH LANGUAGE ARTS

Kentucky Core Academic Standards

In English language arts, the Core Academic Standards contain single-grade standards in my areas of kindergarten and grades 1,2, and 3. Text complexity expectations in Reading, beginning at grade 2. The standards are organized around the follow features:

- Reading and Literature: Text complexity and the growth of comprehension
- Writing and Research: Text types, grade-level focuses, and research
- Speaking and Listening: Flexible communication
- Language Development: Conventions and vocabulary

English language arts at the intermediate level, the Core Academic Standards contain combined standards for grades 4 and 5. The standards are organized around the follow features:

- Reading and Literature: Text complexity and the growth of comprehension
- Writing and Research: Text types, grade-level focuses, and research
- Speaking and Listening: Flexible communication
- Language Development: Conventions and vocabulary

Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, and Language

The descriptions that follow are not standards themselves but instead offer a portrait of students who meet the standards set out in this document. As students advance through the grades and master the standards in reading, writing, speaking, listening, and language, they are able to exhibit with increasing fullness and regularity these capacities of the literate individual.

They demonstrate independence.

Students can, without significant scaffolding, comprehend and evaluate complex texts across a range of types and disciplines, and they can construct effective arguments and convey intricate or multifaceted information. Likewise, students are able independently to discern a speaker's key points, request clarification, and ask relevant questions. They build on others' ideas, articulate their own ideas, and confirm they have been understood. Without prompting, they demonstrate command of standard English and acquire and use a wide-ranging vocabulary. More broadly, they become self-directed learners, effectively seeking out and using resources to assist them, including teachers, peers, and print and digital reference materials.

They build strong content knowledge.

Students establish a base of knowledge across a wide range of subject matter by engaging with works of quality and substance. They become proficient in new areas through research and study. They read purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. They refine and share their knowledge through writing and speaking.

They respond to the varying demands of audience, task, purpose, and discipline.

Students adapt their communication in relation to audience, task, purpose, and discipline. They set and adjust purpose for reading, writing, speaking, listening, and language use as warranted by the task. They appreciate nuances, such as how the composition of an audience should affect tone when speaking and how the connotations of words affect meaning. They also know that different disciplines call for different types of evidence (e.g., documentary evidence in history, experimental evidence in science).

They comprehend as well as critique.

Students are engaged and open-minded—but discerning—readers and listeners. They work diligently to understand precisely what an author or speaker is saying, but they also question an author's or speaker's assumptions and premises and assess the veracity of claims and the soundness of reasoning.

They value evidence.

Students cite specific evidence when offering an oral or written interpretation of a text. They use relevant evidence when supporting their own points in writing and speaking, making their reasoning clear to the reader or listener, and they constructively evaluate others' use of evidence.

They use technology and digital media strategically and capably.

Students employ technology thoughtfully to enhance their reading, writing, speaking, listening, and language use. They tailor their searches online to acquire useful information efficiently, and they integrate what they learn using technology with what they learn offline. They are familiar with the strengths and limitations of various technological tools and mediums and can select and use those best suited to their communication goals.

They come to understand other perspectives and cultures.

Students appreciate that the twenty-first-century classroom and workplace are settings in which people from often widely divergent cultures and who represent diverse experiences and perspectives must learn and work together. Students actively seek to understand other perspectives and cultures through reading and listening, and they are able to communicate effectively with people of varied backgrounds. They evaluate other points of view critically and constructively. Through reading great classic and contemporary works of literature representative of a variety of periods, cultures, and worldviews, students can vicariously inhabit worlds and have experiences much different than their own.

How to read this document

Overall Document Organization

The Standards comprise three main sections: a comprehensive K–5 section and two content area–specific sections for grades 6–12, one for ELA and one for history/social studies, science, and technical subjects. Three appendices accompany the main document.

Each section is divided into strands. K–5 and 6–12 ELA have Reading, Writing, Speaking and Listening, and Language strands; the 6–12 history/ social studies, science, and technical subjects section focuses on Reading and Writing. Each strand is headed by a strand-specific set of College and Career Readiness Anchor Standards that is identical across all grades and content areas.

Standards for each grade within K–8 and for grades 9–10 and 11–12 follow the CCR anchor standards in each strand. Each grade-specific standard (as these standards are collectively referred to) corresponds to the same-numbered CCR anchor standard. Put another way, each CCR anchor standard has an accompanying grade-specific standard translating the broader CCR statement into grade-appropriate end-of-year expectations.

Individual CCR anchor standards can be identified by their strand, CCR status, and number (R.CCR.6, for example). Individual grade-specific standards can be identified by their strand, grade, and number (or number and letter, where applicable), so that RI.4.3, for example, stands for Reading, Informational Text, grade 4, standard 3 and W.5.1a stands for Writing, grade 5, standard 1a. Strand designations can be found in brackets alongside the full strand title.

Who is responsible for which portion of the Standards

A single K–5 section lists standards for reading, writing, speaking, listening, and language across the curriculum, reflecting the fact that most or all of the instruction students in these grades receive comes from one teacher. Grades 6–12 are covered in two content area–specific sections, the first for the English language arts teacher and the second for teachers of history/social studies, science, and technical subjects. Each section uses the same CCR anchor standards but also includes grade-specific standards tuned to the literacy requirements of the particular discipline(s).

Key features of the Standards

Reading: Text complexity and the growth of comprehension

The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by grade “staircase” of increasing text complexity that rises from beginning reading to the college and career readiness level. Whatever they are reading, students must also show a steadily growing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.

Writing: text types, responding to reading, and research

The Standards acknowledge the fact that whereas some writing skills, such as the ability to plan, revise, edit, and publish, are applicable to many types of writing, other skills are more properly defined in terms of specific writing types: arguments, informative/explanatory texts, and narratives. Standard 9 stresses the importance of the writing-reading connection by requiring students to draw and write about evidence from literary and informational texts. Because of the centrality of writing to most forms of inquiry, research standards are prominently included in this strand, though skills important to research are infused throughout the document.

Speaking and Listening: flexible communication and collaboration

Including but not limited to skills necessary for formal presentations, the Speaking and Listening standards require students to develop a range of broadly useful oral communication and interpersonal skills. Students must learn to work together, express and listen carefully to ideas, integrate information from oral, visual, quantitative, and media sources, evaluate what they hear, use media and visual displays strategically to help achieve communicative purposes, and adapt speech to context and task.

Language: Conventions, effective use, and vocabulary

The Language standards include the essential “rules” of standard written and spoken English, but they also approach language as a matter of craft and informed choice among alternatives. The vocabulary standards focus on understanding words and phrases, their relationships, and their nuances and on acquiring new vocabulary, particularly general academic and domain-specific words and phrases.

Appendices A, B, and C

Appendix A contains supplementary material on reading, writing, speaking and listening, and language as well as a glossary of key terms. Appendix B consists of text exemplars illustrating the complexity, quality, and range of reading appropriate for various grade levels with accompanying sample performance tasks. Appendix C includes annotated samples demonstrating at least adequate performance in student writing at various grade levels.

College and Career Readiness Anchor Standards for Reading

The K–5 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Key Ideas and details

1 Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2 Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3 Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Craft and Structure

4 Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5 Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6 Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7 Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.*
8 Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9 Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of text Complexity

10 Read and comprehend complex literary and informational texts independently and proficiently.

* Please see “Research to Build and Present Knowledge” in Writing and “Comprehension and Collaboration” in Speaking and Listening for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

Note on range and content of student reading

To build a foundation for college and career readiness, students must read widely and deeply from among a broad range of high-quality, increasingly challenging literary and informational texts. Through extensive reading of stories, dramas, poems, and myths from diverse cultures and different time periods, students gain literary and cultural knowledge as well as familiarity with various text structures and elements. By reading texts in history/social studies, science, and other disciplines, students build a foundation of knowledge in these fields that will also give them the background to be better readers in all content areas. Students can only gain this foundation when the curriculum is intentionally and coherently structured to develop rich content knowledge within and across grades. Students also acquire the habits of reading independently and closely, which are essential to their future success.

Reading Standards for Literature K–5

The following standards offer a focus for instruction each year and help ensure that students gain adequate exposure to a range of texts and tasks. Rigor is also infused through the requirement that students read increasingly complex texts through the grades. *Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.*

Kindergartners:	Grade 1 students:	Grade 2 students:
Key Ideas and Details		
1. With prompting and support, ask and answer questions about key details in a text.	1. Ask and answer questions about key details in a text.	1. Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
2. With prompting and support, retell familiar stories, including key details.	2. Retell stories, including key details, and demonstrate understanding of their central message or lesson.	2. Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.
3. With prompting and support, identify characters, settings, and major events in a story.	3. Describe characters, settings, and major events in a story, using key details.	3. Describe how characters in a story respond to major events and challenges.
Craft and Structure		
4. Ask and answer questions about unknown words in a text.	4. Identify words and phrases in stories or poems that suggest feelings or appeal to the senses.	4. Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.
5. Recognize common types of texts (e.g., storybooks, poems).	5. Explain major differences between books that tell stories and books that give information, drawing on a wide reading of a range of text types.	5. Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.
6. With prompting and support, name the author and illustrator of a story and define the role of each in telling the story.	6. Identify who is telling the story at various points in a text.	6. Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.
Integration of Knowledge and Ideas		
7. With prompting and support, describe the relationship between illustrations and the story in which they appear (e.g., what moment in a story an illustration depicts).	7. Use illustrations and details in a story to describe its characters, setting, or events.	7. Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.
8. (Not applicable to literature)	8. (Not applicable to literature)	8. (Not applicable to literature)
9. With prompting and support, compare and contrast the adventures and experiences of characters in familiar stories.	9. Compare and contrast the adventures and experiences of characters in stories.	9. Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.
Range of Reading and Level of Text Complexity		
10. Actively engage in group reading activities with purpose and understanding.	10. With prompting and support, read prose and poetry of appropriate complexity for grade 1.	10. By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.

Reading Standards for Literature K–5

Grade 3 students:	Grade 4 students:	Grade 5 students:
Key Ideas and Details		
1. Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	1. Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	1. Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
2. Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.	2. Determine a theme of a story, drama, or poem from details in the text; summarize the text.	2. Determine a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.
3. Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.	3. Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character's thoughts, words, or actions).	3. Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.	4. Determine the meaning of words and phrases as they are used in a text, including those that allude to significant characters found in mythology (e.g., Herculean).	4. Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.
5. Refer to parts of stories, dramas, and poems when writing or speaking about a text, using terms such as chapter, scene, and stanza; describe how each successive part builds on earlier sections.	5. Explain major differences between poems, drama, and prose, and refer to the structural elements of poems (e.g., verse, rhythm, meter) and drama (e.g., casts of characters, settings, descriptions, dialogue, stage directions) when writing or speaking about a text.	5. Explain how a series of chapters, scenes, or stanzas fits together to provide the overall structure of a particular story, drama, or poem.
6. Distinguish their own point of view from that of the narrator or those of the characters.	6. Compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations.	6. Describe how a narrator's or speaker's point of view influences how events are described.
Integration of Knowledge and Ideas		
7. Explain how specific aspects of a text's illustrations contribute to what is conveyed by the words in a story (e.g., create mood, emphasize aspects of a character or setting).	7. Make connections between the text of a story or drama and a visual or oral presentation of the text, identifying where each version reflects specific descriptions and directions in the text.	7. Analyze how visual and multimedia elements contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction, folktale, myth, poem).
8. (Not applicable to literature)	8. (Not applicable to literature)	8. (Not applicable to literature)
9. Compare and contrast the themes, settings, and plots of stories written by the same author about the same or similar characters (e.g., in books from a series).	9. Compare and contrast the treatment of similar themes and topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures.	9. Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.
Range of Reading and Level of Text Complexity		
10. By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the high end of the grades 2–3 text complexity band independently and proficiently.	10. By the end of the year, read and comprehend literature, including stories, dramas, and poetry, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.	10. By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the high end of the grades 4–5 text complexity band independently and proficiently.

Reading Standards for Informational Text K–5

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Kindergartners:	Grade 1 students:	Grade 2 students:
Key Ideas and Details		
1. With prompting and support, ask and answer questions about key details in a text.	1. Ask and answer questions about key details in a text.	1. Ask and answer such questions as *who, what, where, when, why,* and *how* to demonstrate understanding of key details in a text.
2. With prompting and support, identify the main topic and retell key details of a text.	2. Identify the main topic and retell key details of a text.	2. Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.
3. With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.	3. Describe the connection between two individuals, events, ideas, or pieces of information in a text.	3. Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
Craft and Structure		
4. With prompting and support, ask and answer questions about unknown words in a text.	4. Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.	4. Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.
5. Identify the front cover, back cover, and title page of a book.	5. Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.	5. Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.
6. Name the author and illustrator of a text and define the role of each in presenting the ideas or information in a text.	6. Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.	6. Identify the main purpose of a text, including what the author wants to answer, explain, or describe.
Integration of Knowledge and Ideas		
7. With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).	7. Use the illustrations and details in a text to describe its key ideas.	7. Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
8. With prompting and support, identify the reasons an author gives to support points in a text.	8. Identify the reasons an author gives to support points in a text.	8. Describe how reasons support specific points the author makes in a text.
9. With prompting and support, identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).	9. Identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).	9. Compare and contrast the most important points presented by two texts on the same topic.
Range of Reading and Level of Text Complexity		
10. Actively engage in group reading activities with purpose and understanding.	10. With prompting and support, read informational texts appropriately complex for grade 1.	10. By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.

Reading Standards for Informational Text K–5

Grade 3 students:	Grade 4 students:	Grade 5 students:
Key Ideas and Details		
1. Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	1. Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	1. Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
2. Determine the main idea of a text; recount the key details and explain how they support the main idea.	2. Determine the main idea of a text and explain how it is supported by key details; summarize the text.	2. Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.	3. Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.	3. Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
Craft and Structure		
4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.	4. Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.	4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.
5. Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.	5. Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.	5. Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.
6. Distinguish their own point of view from that of the author of a text.	6. Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided.	6. Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.
Integration of Knowledge and Ideas		
7. Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).	7. Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.	7. Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
8. Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).	8. Explain how an author uses reasons and evidence to support particular points in a text.	8. Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).
9. Compare and contrast the most important points and key details presented in two texts on the same topic.	9. Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.	9. Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.
Range of Reading and Level of Text Complexity		
10. By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 2–3 text complexity band independently and proficiently.	10. By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.	10. By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4–5 text complexity band independently and proficiently.

Reading Standards: Foundational Skills (K–5)

These standards are directed toward fostering students' understanding and working knowledge of concepts of print, the alphabetic principle, and other basic conventions of the English writing system. These foundational skills are not an end in and of themselves; rather, they are necessary and important components of an effective, comprehensive reading program designed to develop proficient readers with the capacity to comprehend texts across a range of types and disciplines. Instruction should be differentiated: good readers will need much less practice with these concepts than struggling readers will. The point is to teach students what they need to learn and not what they already know—to discern when particular children or activities warrant more or less attention.

Note: In kindergarten, children are expected to demonstrate increasing awareness and competence in the areas that follow.

Kindergartners:	Grade 1 students:
Print Concepts	
1. Demonstrate understanding of the organization and basic features of print. a. Follow words from left to right, top to bottom, and page by page. b. Recognize that spoken words are represented in written language by specific sequences of letters. c. Understand that words are separated by spaces in print. d. Recognize and name all upper- and lowercase letters of the alphabet.	1. Demonstrate understanding of the organization and basic features of print. a. Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).
Phonological Awareness	
2. Demonstrate understanding of spoken words, syllables, and sounds (phonemes). a. Recognize and produce rhyming words. b. Count, pronounce, blend, and segment syllables in spoken words. c. Blend and segment onsets and rimes of single-syllable spoken words. d. Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (consonant-vowel-consonant, or CVC) words.* (This does not include CVCs ending with /l/, /r/, or /x/.) e. Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words.	2. Demonstrate understanding of spoken words, syllables, and sounds (phonemes). a. Distinguish long from short vowel sounds in spoken single-syllable words. b. Orally produce single-syllable words by blending sounds (phonemes), including consonant blends. c. Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words. d. Segment spoken single-syllable words into their complete sequence of individual sounds (phonemes).

*Words, syllables, or phonemes written in /slashes/ refer to their pronunciation or phonology. Thus, /CVC/ is a word with three phonemes regardless of the number of letters in the spelling of the word.

Reading Standards: Foundational Skills (K–5)

Note: In kindergarten children are expected to demonstrate increasing awareness and competence in the areas that follow.

Kindergartners:	Grade 1 students:	Grade 2 students:
Phonics and Word Recognition		
3. Know and apply grade-level phonics and word analysis skills in decoding words. a. Demonstrate basic knowledge of one-to-one letter-sound correspondences by producing the primary or many of the most frequent sound for each consonant. b. Associate the long and short sounds with common spellings (graphemes) for the five major vowels. c. Read common high-frequency words by sight (e.g., the, of, to, you, she, my, is, are, do, does). d. Distinguish between similarly spelled words by identifying the sounds of the letters that differ.	3. Know and apply grade-level phonics and word analysis skills in decoding words. a. Know the spelling-sound correspondences for common consonant digraphs. b. Decode regularly spelled one-syllable words. c. Know final -e and common vowel team conventions for representing long vowel sounds. d. Use knowledge that every syllable must have a vowel sound to determine the number of syllables in a printed word. e. Decode two-syllable words following basic patterns by breaking the words into syllables. f. Read words with inflectional endings. g. Recognize and read grade-appropriate irregularly spelled words.	3. Know and apply grade-level phonics and word analysis skills in decoding words. a. Distinguish long and short vowels when reading regularly spelled one-syllable words. b. Know spelling-sound correspondences for additional common vowel teams. c. Decode regularly spelled two-syllable words with long vowels. d. Decode words with common prefixes and suffixes. e. Identify words with inconsistent but common spelling-sound correspondences. f. Recognize and read grade-appropriate irregularly spelled words.
Fluency		
4. Read emergent-reader texts with purpose and understanding.	4. Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	4. Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.

Reading Standards: Foundational Skills (K–5)

Grade 3 students:	Grade 4 students:	Grade 5 students:
Phonics and Word Recognition		
3. Know and apply grade-level phonics and word analysis skills in decoding words. a. Identify and know the meaning of the most common prefixes and derivational suffixes. b. Decode words with common Latin suffixes. c. Decode multisyllable words. d. Read grade-appropriate irregularly spelled words.	3. Know and apply grade-level phonics and word analysis skills in decoding words. a. Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.	3. Know and apply grade-level phonics and word analysis skills in decoding words. a. Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.
Fluency		
4. Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	4. Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	4. Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.

College and Career Readiness Anchor Standards for Writing

The K–5 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes*

1 Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2 Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3 Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Production and distribution of Writing

4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6 Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7 Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8 Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

*These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.

Note on range and content of student reading

To build a foundation for college and career readiness, students must read widely and deeply from among a broad range of high-quality, increasingly challenging literary and informational texts. Through extensive reading of stories, dramas, poems, and myths from diverse cultures and different time periods, students gain literary and cultural knowledge as well as familiarity with various text structures and elements. By reading texts in history/social studies, science, and other disciplines, students build a foundation of knowledge in these fields that will also give them the background to be better readers in all content areas. Students can only gain this foundation when the curriculum is intentionally and coherently structured to develop rich content knowledge within and across grades. Students also acquire the habits of reading independently and closely, which are essential to their future success.

Writing Standards K–5

The following standards for K–5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Each year in their writing, students should demonstrate increasing sophistication in all aspects of language use, from vocabulary and syntax to the development and organization of ideas, and they should address increasingly demanding content and sources. *Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.* The expected growth in student writing ability is reflected both in the standards themselves and in the collection of annotated student writing samples in Appendix C.

Kindergartners:	Grade 1 students:	Grade 2 students:
Text Types and Purposes		
1. Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g., My favorite book is . . .).	1. Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.	1. Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.
2. Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.	2. Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.	2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.
3. Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.	3. Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.	3. Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.
Production and Distribution of Writing		
4. (Begins in grade 3)	4. (Begins in grade 3)	4. (Begins in grade 3)
5. With guidance and support from adults, respond to questions and suggestions from peers and add details to strengthen writing as needed.	5. With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.	5. With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.
6. With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.	6. With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.	6. With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
Research to Build and Present Knowledge		
7. Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).	7. Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions).	7. Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).
8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.	8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.	8. Recall information from experiences or gather information from provided sources to answer a question.
9. (Begins in grade 4)	9. (Begins in grade 4)	9. (Begins in grade 4)
Range of Writing		
10. (Begins in grade 3)	10. (Begins in grade 3)	10. (Begins in grade 3)

Writing Standards K–5

Grade 3 students:	Grade 4 students:	Grade 5 students:
Text Types and Purposes		
1. Write opinion pieces on topics or texts, supporting a point of view with reasons. a. Introduce the topic or text they are writing about, state an opinion, and create an organizational structure that lists reasons. b. Provide reasons that support the opinion. c. Use linking words and phrases (e.g., because, therefore, since, for example) to connect opinion and reasons. d. Provide a concluding statement or section.	1. Write opinion pieces on topics or texts, supporting a point of view with reasons and information. a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose. b. Provide reasons that are supported by facts and details. c. Link opinion and reasons using words and phrases (e.g., for instance, in order to, in addition). d. Provide a concluding statement or section related to the opinion presented.	1. Write opinion pieces on topics or texts, supporting a point of view with reasons and information. a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which ideas are logically grouped to support the writer's purpose. b. Provide logically ordered reasons that are supported by facts and details. c. Link opinion and reasons using words, phrases, and clauses (e.g., consequently, specifically). d. Provide a concluding statement or section related to the opinion presented.
2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a. Introduce a topic and group related information together; include illustrations when useful to aiding comprehension. b. Develop the topic with facts, definitions, and details. c. Use linking words and phrases (e.g., also, another, and, more, but) to connect ideas within categories of information. d. Provide a concluding statement or section.	2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a. Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. c. Link ideas within categories of information using words and phrases (e.g., another, for example, also, because). d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Provide a concluding statement or section related to the information or explanation presented.	2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a. Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. c. Link ideas within and across categories of information using words, phrases, and clauses (e.g., in contrast, especially). d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Provide a concluding statement or section related to the information or explanation presented.
3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a. Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations. c. Use temporal words and phrases to signal event order. d. Provide a sense of closure.	3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a. Orient the reader by establishing a situationand introducing a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use dialogue and description to develop experiences and events or show the responses of characters to situations. c. Use a variety of transitional words and phrases to manage the sequence of events. d. Use concrete words and phrases and sensory details to convey experiences and events precisely. e. Provide a conclusion that follows from the narrated experiences or events.	3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use narrative techniques, such as dialogue, description, and pacing, to develop experiences and events or show the responses of characters to situations. c. Use a variety of transitional words, phrases, and clauses to manage the sequence of events. d. Use concrete words and phrases and sensory details to convey experiences and events precisely. e. Provide a conclusion that follows from the narrated experiences or events.

Writing Standards K–5

Grade 3 students:	Grade 4 students:	Grade 5 students:
Production and Distribution of Writing		
4. With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	4. Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	4. Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 3 on pages 28 and 29.)	5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 4 on pages 28 and 29.)	5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 5 on pages 28 and 29.)
6. With guidance and support from adults, use technology to produce and publish writing (using keyboarding skills) as well as to interact and collaborate with others.	6. With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.	6. With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.
Research to Build and Present Knowledge		
7. Conduct short research projects that build knowledge about a topic.	7. Conduct short research projects that build knowledge through investigation of different aspects of a topic.	7. Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.
8. Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.	8. Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.	8. Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.
9. (Begins in grade 4)	9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply grade 4 Reading standards to literature (e.g., "Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text [e.g., a character's thoughts, words, or actions]."). b. Apply grade 4 Reading standards to informational texts (e.g., "Explain how an author uses reasons and evidence to support particular points in a text.").	9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply grade 5 Reading standards to literature (e.g., "Compare and contrast two or more characters, settings, or events in a story or a drama, drawing on specific details in the text [e.g., how characters interact]"). b. Apply grade 5 Reading standards to informational texts (e.g., "Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point[s]").
Range of Writing		
10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

College and Career Readiness Anchor Standards for Speaking and Listening

The K–5 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Comprehension and Collaboration

1 Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

2 Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

3 Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

Presentation of Knowledge and Ideas

4 Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

5 Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

6 Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

Note on range and content of student speaking and listening

To build a foundation for college and career readiness, students must have ample opportunities to take part in a variety of rich, structured conversations—as part of a whole class, in small groups, and with a partner. Being productive members of these conversations requires that students contribute accurate, relevant information; respond to and develop what others have said; make comparisons and contrasts; and analyze and synthesize a multitude of ideas in various domains.

New technologies have broadened and expanded the role that speaking and listening play in acquiring and sharing knowledge and have tightened their link to other forms of communication. Digital texts confront students with the potential for continually updated content and dynamically changing combinations of words, graphics, images, hyperlinks, and embedded video and audio.

Speaking and Listening Standards K–5

The following standards for K–5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. *Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.*

Kindergartners:	Grade 1 students:	Grade 2 students:
Comprehension and Collaboration		
1. Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion). b. Continue a conversation through multiple exchanges.	1. Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion). b. Build on others' talk in conversations by responding to the comments of others through multiple exchanges. c. Ask questions to clear up any confusion about the topics and texts under discussion.	1. Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). b. Build on others' talk in conversations by linking their comments to the remarks of others. c. Ask for clarification and further explanation as needed about the topics and texts under discussion.
2. Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.	2. Ask and answer questions about key details in a text read aloud or information presented orally or through other media.	2. Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
3. Ask and answer questions in order to seek help, get information, or clarify something that is not understood.	3. Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.	3. Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.
Presentation of Knowledge and Ideas		
4. Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.	4. Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.	4. Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
5. Add drawings or other visual displays to descriptions as desired to provide additional detail.	5. Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.	5. Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.
6. Speak audibly and express thoughts, feelings, and ideas clearly.	6. Produce complete sentences when appropriate to task and situation. (See grade 1 Language standards 1 and 3 on page 26 for specific expectations.)	6. Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See grade 2 Language standards 1 and 3 on pages 26 and 27 for specific expectations.)

Speaking and Listening Standards K–5

Grade 3 students:	Grade 4 students:	Grade 5 students:
Comprehension and Collaboration		
1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 3 topics and texts*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. b. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). c. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. d. Explain their own ideas and understanding in light of the discussion.	1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. b. Follow agreed-upon rules for discussions and carry out assigned roles. c. Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others. d. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.	1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. b. Follow agreed-upon rules for discussions and carry out assigned roles. c. Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others. d. Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
2. Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	2. Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	2. Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
3. Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.	3. Identify the reasons and evidence a speaker provides to support particular points.	3. Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.
Presentation of Knowledge and Ideas		
4. Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.	4. Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.	4. Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5. Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.	5. Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.	5. Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.
6. Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See grade 3 Language standards 1 and 3 on pages 28 and 29 for specific expectations.)	6. Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English when appropriate to task and situation. (See grade 4 Language standards 1 on pages 28 and 29 for specific expectations.)	6. Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation. (See grade 5 Language standards 1 and 3 on pages 28 and 29 for specific expectations.)

College and Career Readiness Anchor Standards for Language

The K–5 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Conventions of Standard English

1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

Knowledge of Language

3 Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

Vocabulary acquisition and Use

4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.

5 Demonstrate understanding of word relationships and nuances in word meanings.

6 Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

Note on range and content of student language use

To build a foundation for college and career readiness in language, students must gain control over many conventions of standard English grammar, usage, and mechanics as well as learn other ways to use language to convey meaning effectively. They must also be able to determine or clarify the meaning of grade-appropriate words encountered through listening, reading, and media use; come to appreciate that words have nonliteral meanings, shadings of meaning, and relationships to other words; and expand their vocabulary in the course of studying content. The inclusion of Language standards in their own strand should not be taken as an indication that skills related to conventions, effective language use, and vocabulary are unimportant to reading, writing, speaking, and listening; indeed, they are inseparable from such contexts.

Language Standards K–5

The following standards for grades K–5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. *Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.* Beginning in grade 3, skills and understandings that are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking are marked with an asterisk (*). See the table on page 30 for a complete list and Appendix A for an example of how these skills develop in sophistication.

Kindergartners:	Grade 1 students:	Grade 2 students:
Conventions of Standard English		
1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Print many upper- and lowercase letters. b. Use frequently occurring nouns and verbs. c. Form regular plural nouns orally by adding /s/ or /es/ (e.g., *dog, dogs; wish, wishes*). d. Understand and use question words (interrogatives) (e.g., *who, what, where, when, why, how*). e. Use the most frequently occurring prepositions (e.g., *to, from, in, out, on, off, for, of, by, with*). f. Produce and expand complete sentences in shared language activities.	1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Print all upper- and lowercase letters. b. Use common, proper, and possessive nouns. c. Use singular and plural nouns with matching verbs in basic sentences (e.g., *He hops; We hop*). d. Use personal, possessive, and indefinite pronouns (e.g., *I, me, my; they, them, their, anyone, everything*). e. Use verbs to convey a sense of past, present, and future (e.g., *Yesterday I walked home; Today I walk home; Tomorrow I will walk home*). f. Use frequently occurring adjectives. g. Use frequently occurring conjunctions (e.g., *and, but, or, so, because*). h. Use determiners (e.g., articles, demonstratives). i. Use frequently occurring prepositions (e.g., *during, beyond, toward*). j. Produce and expand complete simple and compound declarative, interrogative, imperative, and exclamatory sentences in response to prompts.	1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Use collective nouns (e.g., *group*). b. Form and use frequently occurring irregular plural nouns (e.g., *feet, children, teeth, mice, fish*). c. Use reflexive pronouns (e.g., *myself, ourselves*). d. Form and use the past tense of frequently occurring irregular verbs (e.g., *sat, hid, told*). e. Use adjectives and adverbs, and choose between them depending on what is to be modified. f. Produce, expand, and rearrange complete simple and compound sentences (e.g., *The boy watched the movie; The little boy watched the movie; The action movie was watched by the little boy*).
2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Capitalize the first word in a sentence and the pronoun I. b. Recognize and name end punctuation. c. Write a letter or letters for most consonant and short-vowel sounds (phonemes). d. Spell simple words phonetically, drawing on knowledge of sound-letter relationships.	2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Capitalize dates and names of people. b. Use end punctuation for sentences. c. Use commas in dates and to separate single words in a series. d. Use conventional spelling for words with common spelling patterns and for frequently occurring irregular words. e. Spell untaught words phonetically, drawing on phonemic awareness and spelling conventions.	2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Capitalize holidays, product names, and geographic names. b. Use commas in greetings and closings of letters. c. Use an apostrophe to form contractions and frequently occurring possessives. d. Generalize learned spelling patterns when writing words (e.g., cage → badge; boy → boil). e. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.

Language Standards K–5

Kindergartners:	Grade 1 students:	Grade 2 students:
Knowledge of Language		
3. (Begins in grade 2)	3. (Begins in grade 2)	3. Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Compare formal and informal uses of English.
Vocabulary Acquisition and Use		
4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *kindergarten reading and content*. a. Identify new meanings for familiar words and apply them accurately (e.g., knowing *duck* is a bird and learning the verb *to duck*). b. Use the most frequently occurring inflections and affixes (e.g., *-ed, -s, re-, un-, pre-, -ful, -less*) as a clue to the meaning of an unknown word.	4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 1 reading and content*, choosing flexibly from an array of strategies. a. Use sentence-level context as a clue to the meaning of a word or phrase. b. Use frequently occurring affixes as a clue to the meaning of a word. c. Identify frequently occurring root words (e.g., *look*) and their inflectional forms (e.g., *looks, looked, looking*).	4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 2 reading and content*, choosing flexibly from an array of strategies. a. Use sentence-level context as a clue to the meaning of a word or phrase. b. Determine the meaning of the new word formed when a known prefix is added to a known word (e.g., *happy/unhappy, tell/retell*). c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., *addition, additional*). d. Use knowledge of the meaning of individual words to predict the meaning of compound words (e.g., *birdhouse, lighthouse, housefly; bookshelf, notebook, bookmark*). e. Use glossaries and beginning dictionaries, both print and digital, to determine or clarify the meaning of words and phrases.
5. With guidance and support from adults, explore word relationships and nuances in word meanings. a. Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent. b. Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites (antonyms). c. Identify real-life connections between words and their use (e.g., note places at school that are *colorful*). d. Distinguish shades of meaning among verbs describing the same general action (e.g., *walk, march, strut, prance*) by acting out the meanings.	5. With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings. a. Sort words into categories (e.g., colors, clothing) to gain a sense of the concepts the categories represent. b. Define words by category and by one or more key attributes (e.g., a *duck* is a bird that swims; a *tiger* is a large cat with stripes). c. Identify real-life connections between words and their use (e.g., note places at home that are *cozy*). d. Distinguish shades of meaning among verbs differing in manner (e.g., *look, peek, glance, stare, glare, scowl*) and adjectives differing in intensity (e.g., *large, gigantic*) by defining or choosing them or by acting out the meanings.	5. Demonstrate understanding of word relationships and nuances in word meanings. a. Identify real-life connections between words and their use (e.g., describe foods that are *spicy* or *juicy*). b. Distinguish shades of meaning among closely related verbs (e.g., *toss, throw, hurl*) and closely related adjectives (e.g., *thin, slender, skinny, scrawny*).
6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts.	6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using frequently occurring conjunctions to signal simple relationships (e.g., *I named my hamster Nibblet because she nibbles too much because she likes that*).	6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., *When other kids are happy that makes me happy*).

Language Standards K–5

Grade 3 students:	Grade 4 students:	Grade 5 students:
Conventions of Standard English		
1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in particular sentences. b. Form and use regular and irregular plural nouns. c. Use abstract nouns (e.g., *childhood*). d. Form and use regular and irregular verbs. e. Form and use the simple (e.g., *I walked; I walk; I will walk*) verb tenses. f. Ensure subject-verb and pronoun-antecedent agreement.* g. Form and use comparative and superlative adjectives and adverbs, and choose between them depending on what is to be modified. h. Use coordinating and subordinating conjunctions. i. Produce simple, compound, and complex sentences.	1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Use relative pronouns (*who, whose, whom, which, that*) and relative adverbs (*where, when, why*). b. Form and use the progressive (e.g., *I was walking; I am walking; I will be walking*) verb tenses. c. Use modal auxiliaries (e.g., *can, may, must*) to convey various conditions. d. Order adjectives within sentences according to conventional patterns (e.g., *a small red bag* rather than *a red small bag*). e. Form and use prepositional phrases. f. Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.* g. Correctly use frequently confused words (e.g., *to, too, two; there, their*).*	1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Explain the function of conjunctions, prepositions, and interjections in general and their function in particular sentences. b. Form and use the perfect (e.g., *I had walked; I have walked; I will have walked*) verb tenses. c. Use verb tense to convey various times, sequences, states, and conditions. d. Recognize and correct inappropriate shifts in verb tense.* e. Use correlative conjunctions (e.g., *either/or, neither/nor*).
2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Capitalize appropriate words in titles. b. Use commas in addresses. c. Use commas and quotation marks in dialogue. d. Form and use possessives. e. Use conventional spelling for high-frequency and other studied words and for adding suffixes to base words (e.g., *sitting, smiled, cries, happiness*). f. Use spelling patterns and generalizations (e.g., word families, position-based spellings, syllable patterns, ending rules, meaningful word parts) in writing words. g. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.	2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Use correct capitalization. b. Use commas and quotation marks to mark direct speech and quotations from a text. c. Use a comma before a coordinating conjunction in a compound sentence. d. Spell grade-appropriate words correctly, consulting references as needed.	2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Use punctuation to separate items in a series.* b. Use a comma to separate an introductory element from the rest of the sentence. c. Use a comma to set off the words yes and no (e.g., *Yes, thank you*), to set off a tag question from the rest of the sentence (e.g., *It's true, isn't it?*), and to indicate direct address (e.g., *Is that you, Steve?*). d. Use underlining, quotation marks, or italics to indicate titles of works. e. Spell grade-appropriate words correctly, consulting references as needed.

Language Standards K–5

Grade 3 students:	Grade 4 students:	Grade 5 students:
Knowledge of Language		
3. Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Choose words and phrases for effect.* b. Recognize and observe differences between the conventions of spoken and written standard English.	3. Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Choose words and phrases to convey ideas precisely.* b. Choose punctuation for effect.* c. Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion).	3. Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Expand, combine, and reduce sentences for meaning, reader/listener interest, and style. b. Compare and contrast the varieties of English (e.g., dialects, registers) used in stories, dramas, or poems.
Vocabulary Acquisition and Use		
4. Determine or clarify the meaning of unknown and multiple-meaning word and phrases based on *grade 3 reading and content*, choosing flexibly from a range of strategies. a. Use sentence-level context as a clue to the meaning of a word or phrase. b. Determine the meaning of the new word formed when a known affix is added to a known word (e.g., *agreeable/disagreeable, comfortable/uncomfortable, care/careless, heat/preheat*). c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., *company, companion*). d. Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases.	4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 4 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., *telegraph, photograph, autograph*). c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.	4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 5 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., *photograph, photosynthesis*). c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.
5. Demonstrate understanding of word relationships and nuances in word meanings. a. Distinguish the literal and nonliteral meanings of words and phrases in context (e.g., *take steps*). b. Identify real-life connections between words and their use (e.g., describe people who are *friendly* or *helpful*). c. Distinguish shades of meaning among related words that describe states of mind or degrees of certainty (e.g., *knew, believed, suspected, heard, wondered*).	5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Explain the meaning of simple similes and metaphors (e.g., *as pretty as a picture*) in context. b. Recognize and explain the meaning of common idioms, adages, and proverbs. c. Demonstrate understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).	5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figurative language, including similes and metaphors, in context. b. Recognize and explain the meaning of common idioms, adages, and proverbs. c. Use the relationship between particular words (e.g., synonyms, antonyms, homographs) to better understand each of the words.
6. Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships (e.g., *After dinner that night we went looking for them*).	6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., *quizzed, whined, stammered*) and that are basic to a particular topic (e.g., *wildlife, conservation,* and *endangered* when discussing animal preservation).	6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., *however, although, nevertheless, similarly, moreover, in addition*).

Language Progressive Skills, by Grade

The following skills, marked with an asterisk (*) in Language standards 1–3, are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking.

Standard	Grade(s)							
	3	4	5	6	7	8	9–10	11–12
L.3.1f. Ensure subject-verb and pronoun-antecedent agreement.	■	■	■	■	■	■	■	■
L.3.3a. Choose words and phrases for effect.	■	■	■	■	■	■	■	■
L.4.1f. Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.		■	■	■	■	■	■	■
L.4.1g. Correctly use frequently confused words (e.g., *to/too/two; there/their*).		■	■	■	■	■	■	■
L.4.3a. Choose words and phrases to convey ideas precisely.*		■	■	■				
L.4.3b. Choose punctuation for effect.		■	■	■	■	■	■	■
L.5.1d. Recognize and correct inappropriate shifts in verb tense.			■	■	■	■	■	■
L.5.2a. Use punctuation to separate items in a series.†			■	■	■	■		
L.6.1c. Recognize and correct inappropriate shifts in pronoun number and person.				■	■	■	■	■
L.6.1d. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).				■	■	■	■	■
L.6.1e. Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.				■	■	■	■	■
L.6.2a. Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.				■	■	■	■	■
L.6.3a. Vary sentence patterns for meaning, reader/listener interest, and style.‡				■	■	■	■	
L.6.3b. Maintain consistency in style and tone.				■	■	■	■	■
L.7.1c. Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.					■	■	■	■
L.7.3a. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.					■	■	■	■
L.8.1d. Recognize and correct inappropriate shifts in verb voice and mood.						■	■	■
L.9–10.1a. Use parallel structure.							■	■

*Subsumed by L.7.3a
†Subsumed by L.9–10.1a
‡Subsumed by L.11–12.3a

Standard 10: Range, Quality, and Complexity of Student Reading K–5

Measuring Text Complexity: Three Factors

Qualitative evaluation of the text:	Levels of meaning, structure, language conventionality and clarity, and knowledge demands
Quantitative evaluation of the text:	Readability measures and other scores of text complexity
Matching reader to text and task:	Reader variables (such as motivation, knowledge, and experiences) and task variables (such as purpose and the complexity generated by the task assigned and the questions posed)

Note: More detailed information on text complexity and how it is measured is contained in Appendix A.

Range of Text Types for K–5

Students in K–5 apply the Reading standards to the following range of text types, with texts selected from a broad range of cultures and periods.

	Literature		Informational Text
Stories	dramas	Poetry	Literary nonfiction and Historical, Scientific, and technical texts
Includes children's adventure stories, folktales, legends, fables, fantasy, realistic fiction, and myth	Includes staged dialogue and brief familiar scenes	Includes nursery rhymes and the subgenres of the narrative poem, limerick, and free verse poem	Includes biographies and autobiographies; books about history, social studies, science, and the arts; technical texts, including directions, forms, and information displayed in graphs, charts, or maps; and digital sources on a range of topics

* Read-aloud ** Read-along

Texts Illustrating the Complexity, Quality, and Range of Student Reading K–5

	Literature: Stories, drama, Poetry	Informational texts: Literary nonfiction and Historical, Scientific, and technical texts
K*	• *Over in the Meadow* by John Langstaff (traditional) (c1800)* • *A Boy, a Dog, and a Frog* by Mercer Mayer (1967) • *Pancakes for Breakfast* by Tomie DePaola (1978) • *A Story A Story* by Gail E. Haley (1970)* • *Kitten's First Full Moon* by Kevin Henkes (2004)*	• *My Five Senses* by Aliki (1962)** • *Truck* by Donald Crews (1980) • *Read Signs* by Tana Hoban (1987) • *What Do You Do With a Tail Like This?* by Steve Jenkins and Robin Page (2003)* • *Amazing Whales!* by Sarah L. Thomson (2005)*
1*	• "Mix a Pancake" by Christina G. Rossetti (1893)** • *Mr. Popper's Penguins* by Richard Atwater (1938)* • *Little Bear* by Else Holmelund Minarik, illustrated by Maurice Sendak (1957)** • *Frog and Toad Together* by Arnold Lobel (1971)** • *Hi! Fly Guy* by Tedd Arnold (2006)	• *A Tree Is a Plant* by Clyde Robert Bulla, illustrated by Stacey Schuett (1960)** • *Starfish* by Edith Thacher Hurd (1962) • *Follow the Water from Brook to Ocean* by Arthur Dorros (1991 • *From Seed to Pumpkin* by Wendy Pfeffer, illustrated by James Graham Hale (2004)* • *How People Learned to Fly* by Fran Hodgkins and True Kelley (2007)*
2–3	• "Who Has Seen the Wind?" by Christina G. Rossetti (1893) • *Charlotte's Web* by E. B. White (1952)* • *Sarah, Plain and Tall* by Patricia MacLachlan (1985 • *Tops and Bottoms* by Janet Stevens (1995) • *Poppleton in Winter* by Cynthia Rylant, illustrated by Mark Teague (2001)	• *A Medieval Feast* by Aliki (1983) • *From Seed to Plant* by Gail Gibbons (1991) • *The Story of Ruby Bridges* by Robert Coles (1995)* • *A Drop of Water: A Book of Science and Wonder* by Walter Wick (1997) • *Moonshot: The Flight of Apollo 11* by Brian Floca (2009)
4–5	• *Alice's Adventures in Wonderland* by Lewis Carroll (1865 • "Casey at the Bat" by Ernest Lawrence Thayer (1888) • *The Black Stallion* by Walter Farley (1941) • "Zlateh the Goat" by Isaac Bashevis Singer (1984) • *Where the Mountain Meets the Moon* by Grace Lin (2009)	• *Discovering Mars: The Amazing Story of the Red Planet* by Melvin Berger (1992) • *Hurricanes: Earth's Mightiest Storms* by Patricia Lauber (1996) • *A History of US* by Joy Hakim (2005) • *Horses* by Seymour Simon (2006) • *Quest for the Tree Kangaroo: An Expedition to the Cloud Forest of New Guinea* by Sy Montgomery (2006)

Note: Given space limitations, the illustrative texts listed above are meant only to show individual titles that are representative of a wide range of topics and genres. (See Appendix B for excerpts of these and other texts illustrative of K–5 text complexity, quality, and range.) At a curricular or instructional level, within and across grade levels, texts need to be selected around topics or themes that generate knowledge and allow students to study those topics or themes in depth. On the next page is an example of progressions of texts building knowledge across grade levels.

*Children at the kindergarten and grade 1 levels should be expected to read texts independently that have been specifically written to correlate to their reading level and their word knowledge. Many of the titles listed above are meant to supplement carefully structured independent reading with books to read along with a teacher or that are read aloud to students to build knowledge and cultivate a joy in reading.

Staying on Topic Within a Grade and Across Grades: How to Build Knowledge Systematically in English Language Arts K–5

Building knowledge systematically in English language arts is like giving children various pieces of a puzzle in each grade that, over time, will form one big picture. At a curricular or instructional level, texts—within and across grade levels—need to be selected around topics or themes that systematically develop the knowledge base of students. Within a grade level, there should be an adequate number of titles on a single topic that would allow children to study that topic for a sustained period. The knowledge children have learned about particular topics in early grade levels should then be expanded and developed in subsequent grade levels to ensure an increasingly deeper understanding of these topics. Children in the upper elementary grades will generally be expected to read these texts independently and reflect on them in writing. However, children in the early grades (particularly K–2) should participate in rich, structured conversations with an adult in response to the written texts that are read aloud, orally comparing and contrasting as well as analyzing and synthesizing, in the manner called for by the Standards.

Preparation for reading complex informational texts should begin at the very earliest elementary school grades. What follows is one example that uses domain-specific nonfiction titles across grade levels to illustrate how curriculum designers and classroom teachers can infuse the English language arts block with rich, age-appropriate content knowledge and vocabulary in history/social studies, science, and the arts. Having students listen to informational read-alouds in the early grades helps lay the necessary foundation for students' reading and understanding of increasingly complex texts on their own in subsequent grades.

Exemplar Texts on a Topic Across Grades	K	1	2–3	4–5
The Human Body Students can begin learning about the human body starting in kindergarten and then review and extend their learning during each subsequent grade.	**The five senses and associated body parts** • *My Five Senses* by Aliki (1989) • *Hearing* by Maria Rius (1985) • *Sight* by Maria Rius (1985) • *Smell* by Maria Rius (1985) • *Taste* by Maria Rius (1985) • *Touch* by Maria Rius (1985) **Taking care of your body: overview (hygiene, diet, exercise, rest)** • *My Amazing Body: A First Look at Health & Fitness* by Pat Thomas (2001) • *Get Up and Go!* by Nancy Carlson (2008) • *Go Wash Up* by Doering Tourville (2008) • *Sleep* by Paul Showers (1997) • *Fuel the Body* by Doering Tourville (2008)	**Introduction to the systems of the human body and associated body parts** • *Under Your Skin: Your Amazing Body* by Mick Manning (2007) • *Me and My Amazing Body* by Joan Sweeney (1999) • *The Human Body* by Gallimard Jeunesse (2007) • *The Busy Body Book* by Lizzy Rockwell (2008) • *First Encyclopedia of the Human Body* by Fiona Chandler (2004) **Taking care of your body: Germs, diseases, and preventing illness** • *Germs Make Me Sick* by Marilyn Berger (1995) • *Tiny Life on Y our Body* by Christine Taylor-Butler (2005) • *Germ Stories* by Arthur Kornberg (2007) • *All About Scabs* by GenichiroYagu (1998)	**Digestive and excretory systems** • *What Happens to a Hamburger* by Paul Showers (1985) • *The Digestive System* by Christine Taylor-Butler (2008) • *The Digestive System* by Rebecca L. Johnson (2006) • *The Digestive System* by Kristin Petrie (2007) **Taking care of your body: healthy eating and nutrition** • *Good Enough to Eat* by Lizzy Rockwell (1999) • *Showdown at the Food Pyramid* by Rex Barron (2004) **Muscular, skeletal, and nervous systems** • *The Mighty Muscular and Skeletal Systems* Crabtree Publishing (2009) • *Muscles* by Seymour Simon (1998) • *Bones* by Seymour Simon (1998) *The Astounding Nervous System* Crabtree Publishing (2009) • *The Nervous System* by Joelle Riley (2004)	**Circulatory system** • *The Heart by Seym our Simon (2006)* • *The Heart and Circulation by Carol Ballard (2005)* • *The Circulatory System by Kristin Petrie (2007)* • *The Amazing Circulatory System by John Burstein (2009)* **Respiratory system** • *The Lungs* by Seymour Simon (2007) • *The Respiratory System* by Susan Glass (2004) • *The Respiratory System* by Kristin Petrie (2007) • *The Remarkable Respiratory System* by John Burstein (2009) **Endocrine system** • *The Endocrine System* by Rebecca Olien (2006) • *The Exciting E ndocrine System* by John Burstein (2009)

ELEMENTARY MATHEMATICS

Kentucky Core Academic Standards

Mathematics Core Academic Standards for primary, grades K, 1, 2, and 3 contain several headings, each one the title of a single progression having significant presence in that particular grade level. Under each of these progression headings, there appear core standards, divided into standards describing concepts student should understand and standards describing skills students should acquire. A typical progression spans a number of grades, but does not span all of primary.

Introduction

Toward greater focus and coherence

For over a decade, research studies of mathematics education in high-performing countries have pointed to the conclusion that the mathematics curriculum in the United States must become substantially more focused and coherent in order to improve mathematics achievement in this country. To deliver on the promise of common standards, the standards must address the problem of a curriculum that is "a mile wide and an inch deep." These Standards are a substantial answer to that challenge.

Understanding mathematics

These Standards define what students should understand and be able to do in their study of mathematics. Asking a student to understand something means asking a teacher to assess whether the student has understood it. But what does mathematical understanding look like? One hallmark of mathematical understanding is the ability to justify, in a way appropriate to the student's mathematical maturity, *why* a particular mathematical statement is true or where a mathematical rule comes from. There is a world of difference between a student who can summon a mnemonic device to expand a product such as $(a + b)(x + y)$ and a student who can explain where the mnemonic comes from. The student who can explain the rule understands the mathematics, and may have a better chance to succeed at a less familiar task such as expanding $(a + b + c)(x + y)$. Mathematical understanding and procedural skill are equally important, and both are assessable using mathematical tasks of sufficient richness.

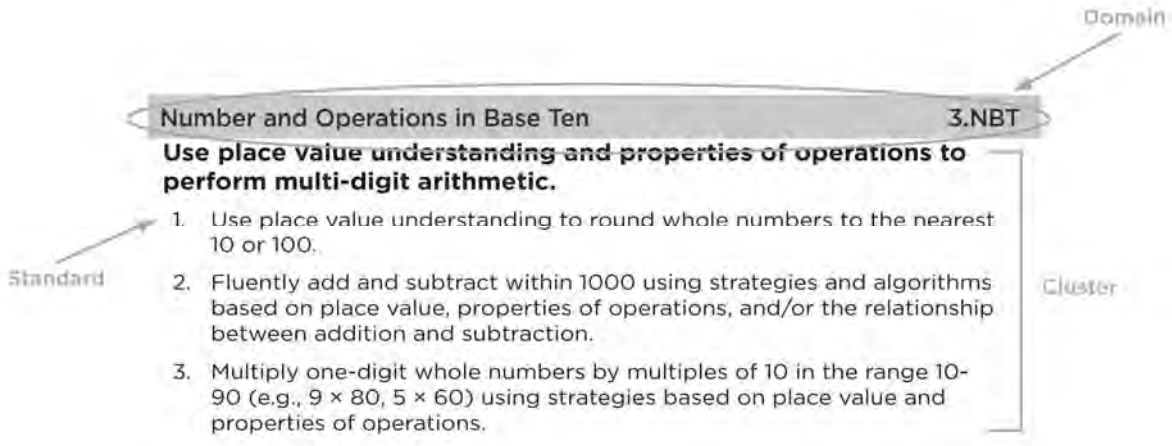
The Standards set grade-specific standards but do not define the intervention methods or materials necessary to support students who are well below or well above grade-level expectations. It is also beyond the scope of the Standards to define the full range of supports appropriate for English language learners and for students with special needs. At the same time, all students must have the opportunity to learn and meet the same high standards if they are to access the knowledge and skills necessary in their post-school lives. The Standards should be read as allowing for the widest possible range of students to participate fully from the outset, along with appropriate accommodations to ensure maximum participation of students with special education needs. For example, for students with disabilities reading should allow for use of Braille, screen reader technology, or other assistive devices, while writing should include the use of a scribe, computer, or speech-to-text technology. In a similar vein, speaking and listening should be interpreted broadly to include sign language. No set of grade-specific standards can fully reflect the great variety in abilities, needs, learning rates, and achievement levels of students in any given classroom. However, the Standards do provide clear signposts along the way to the goal of college and career readiness for all students.

How to read the grade level standards

Standards define what students should understand and be able to do.

Clusters are groups of related standards. Note that standards from different clusters may sometimes be closely related, because mathematics is a connected subject.

Domains are larger groups of related standards. Standards from different domains may sometimes be closely related.



These Standards do not dictate curriculum or teaching methods. For example, just because topic A appears before topic B in the standards for a given grade, it does not necessarily mean that topic A must be taught before topic B. A teacher might prefer to teach topic B before topic A, or might choose to highlight connections by teaching topic A and topic B at the same time. Or, a teacher might prefer to teach a topic of his or her own choosing that leads, as a byproduct, to students reaching the standards for topics A and B.

What students can learn at any particular grade level depends upon what they have learned before. Ideally then, each standard in this document might have been phrased in the form, “Students who already know ... should next come to learn ....” But at present this approach is unrealistic—not least because existing education research cannot specify all such learning pathways. Of necessity therefore, grade placements for specific topics have been made on the basis of state and international comparisons and the collective experience and collective professional judgment of educators, researchers and mathematicians. One promise of common state standards is that over time they will allow research on learning progressions to inform and improve the design of standards to a much greater extent than is possible today. Learning opportunities will continue to vary across schools and school systems, and educators should make every effort to meet the needs of individual students based on their current understanding.

These Standards are not intended to be new names for old ways of doing business. They are a call to take the next step. It is time for states to work together to build on lessons learned from two decades of standards based reforms. It is time to recognize that standards are not just promises to our children, but promises we intend to keep.

Mathematics | Standards for Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).

1. Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2. Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

4. Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6. Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7 × 8 equals the well remembered 7 × 5 + 7 × 3, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2 × 7 and the 9 as 2 + 7. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 – 3(x – y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

8. Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word “understand” are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices.

In this respect, those content standards which set an expectation of understanding are potential “points of intersection” between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.

Mathematics | Kindergarten

In Kindergarten, instructional time should focus on two critical areas: (1) representing, relating, and operating on whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

(1) Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as 5 + 2 = 7 and 7 – 2 = 5. (Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but it is not required.) Students choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

(2) Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

Grade K Overview

Counting and Cardinality

- Know number names and the count sequence.
- Count to tell the number of objects.
- Compare numbers.

Operations and Algebraic Thinking

- Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

Number and Operations in Base Ten

- Work with numbers 11–19 to gain foundations for place value.

Measurement and Data

- Describe and compare measurable attributes.
- Classify objects and count the number of objects in categories.

Geometry

- Identify and describe shapes.
- Analyze, compare, create, and compose shapes.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Counting and Cardinality K.CC

Know number names and the count sequence.

1. Count to 100 by ones and by tens.
2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

Count to tell the number of objects.

4. Understand the relationship between numbers and quantities; connect counting to cardinality.
    a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
    b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
    c. Understand that each successive number name refers to a quantity that is one larger.
5. Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

Compare numbers.

6. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.1
7. Compare two numbers between 1 and 10 presented as written numerals.

Operations and Algebraic Thinking K.OA

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

1. Represent addition and subtraction with objects, fingers, mental images, drawings2, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).
4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
5. Fluently add and subtract within 5.

[1] Include groups with up to ten objects.

[2] Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)

Number and Operations in Base Ten K.NBT

Work with numbers 11–19 to gain foundations for place value.

1 Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Measurement and Data K.MD

Describe and compare measurable attributes.

1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

2 Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

Classify objects and count the number of objects in each category.

3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.[1]

Geometry K.G

Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

2 Correctly name shapes regardless of their orientations or overall size.

3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

Analyze, compare, create, and compose shapes.

4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).

5 Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

6 Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?"*

[1] Limit category counts to be less than or equal to 10.

Mathematics | Grade 1

In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

(1) Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.

(2) Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.

(3) Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.[1]

(4) Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

[1] Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use this technical term.

Grade 1 Overview

Operations and Algebraic Thinking

- Represent and solve problems involving addition and subtraction.
- Understand and apply properties of operations and the relationship between addition and subtraction.
- Add and subtract within 20.
- Work with addition and subtraction equations.

Number and Operations In Base Ten

- Extend the counting sequence.
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data

- Measure lengths indirectly and by iterating length units.
- Tell and write time.
- Represent and interpret data.

Geometry

- Reason with shapes and their attributes.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Operations and Algebraic Thinking 1.OA

Represent and solve problems involving addition and subtraction.

1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.[1]
2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Understand and apply properties of operations and the relationship between addition and subtraction.

3. Apply properties of operations as strategies to add and subtract.[2] Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)
4. Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.

Add and subtract within 20.

5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).

Work with addition and subtraction equations.

7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.
8. Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = □ – 3, 6 + 6 = □.

Number and Operations in Base Ten 1NBT

Extend the counting sequence.

1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

Understand place value.

2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
    a. 10 can be thought of as a bundle of ten ones — called a “ten.”
    b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
    c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

[1] See Glossary, Table 1.
[2] Students need not use formal terms for these properties.

3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

Use place value understanding and properties of operations to add and subtract.

4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

6 Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Measurement and Data 1.MD

Measure lengths indirectly and by iterating length units.

1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.

2 Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.

Tell and write time.

3 Tell and write time in hours and half-hours using analog and digital clocks.

Represent and interpret data.

4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Geometry 1.G

Reason with shapes and their attributes.

1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

2 Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.1

3 Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

[1] Students do not need to learn formal names such as “right rectangular prism.”

Mathematics | Grade 2

In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

(1) Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

(2) Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.

(3) Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.

(4) Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

Grade 2 Overview

Operations and Algebraic Thinking

- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.

Number and Operations In Base Ten

- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data

- Measure and estimate lengths in standard units.
- Relate addition and subtraction to length.
- Work with time and money.
- Represent and interpret data.

Geometry

- Reason with shapes and their attributes.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning

Operations and Algebraic Thinking 2.OA

Represent and solve problems involving addition and subtraction.

1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[1]

Add and subtract within 20.

2 Fluently add and subtract within 20 using mental strategies.[2] By end of Grade 2, know from memory all sums of two one-digit numbers.

Work with equal groups of objects to gain foundations for multiplication.

3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

4 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

Number and Operations in Base Ten 2.NBT

Understand place value.

1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

   a. 100 can be thought of as a bundle of ten tens — called a “hundred.”

   b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

2 Count within 1000; skip-count by 5s, 10s, and 100s.

3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Use place value understanding and properties of operations to add and subtract.

5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

6 Add up to four two-digit numbers using strategies based on place value and properties of operations.

7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

9 Explain why addition and subtraction strategies work, using place value and the properties of operations.[1]

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[1] See Glossary, Table 1.

[2] See standard 1.OA.6 for a list of mental strategies.

Measurement and Data 2.MD

Measure and estimate lengths in standard units.

1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

3 Estimate lengths using units of inches, feet, centimeters, and meters.

4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Relate addition and subtraction to length.

5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

Work with time and money.

7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*

Represent and interpret data.

9 Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems[2] using information presented in a bar graph.

Geometry 2.G

Reason with shapes and their attributes.

1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.[3] Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

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1 Explanations may be supported by drawings or objects.

2 See Glossary, Table 1.

3 Sizes are compared directly or visually, not compared by measuring.

Mathematics | Grade 3

In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

(1) Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division.

(2) Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole. For example, 1/2 of the paint in a small bucket could be less paint than 1/3 of the paint in a larger bucket, but 1/3 of a ribbon is longer than 1/5 of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

(3) Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.

(4) Students describe, analyze, and compare properties of two dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.

Grade 3 Overview

Operations and Algebraic Thinking

- Represent and solve problems involving multiplication and division.
- Understand properties of multiplication and the relationship between multiplication and division.
- Multiply and divide within 100.
- Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Number and Operations In Base Ten

- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations—Fractions

- Develop understanding of fractions as numbers.

Measurement and Data

- Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
- Represent and interpret data.
- Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
- Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Geometry

- Reason with shapes and their attributes.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Operations and Algebraic Thinking 3.OA

Represent and solve problems involving multiplication and division.

1 Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5 × 7.

2 Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.

3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[1]

4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = □ ÷ 3, 6 × 6 = ?.

Understand properties of multiplication and the relationship between multiplication and division.

5 Apply properties of operations as strategies to multiply and divide.[2] Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)

6 Understand division as an unknown-factor problem. For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.

Multiply and divide within 100.

7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Solve problems involving the four operations, and identify and explain patterns in arithmetic.

8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.[3]

9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

Number and Operations in Base Ten 3.NBT

Use place value understanding and properties of operations to perform multi-digit arithmetic.[4]

1 Use place value understanding to round whole numbers to the nearest 10 or 100.

2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

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[1] See Glossary, Table 2.

[2] Students need not use formal terms for these properties.

[3] This standard is limited to problems posed with whole numbers and having whole number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

[4] A range of algorithms may be used.

3 Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.

Number and Operations—Fractions[1] 3.NF

Develop understanding of fractions as numbers.

1 Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.

2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.

a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line.

b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.

3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model.

c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.

d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Measurement and Data 3.MD

Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).[2] Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.[3]

Represent and interpret data.

3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*

[1] Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.

[2] Excludes compound units such as cm^3 and finding the geometric volume of a container.

[3] Excludes multiplicative comparison problems (problems involving notions of "times as much"; see Glossary, Table 2).

4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

5 Recognize area as an attribute of plane figures and understand concepts of area measurement.

a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.

b. A plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units.

6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

7 Relate area to the operations of multiplication and addition.

a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

b. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.

d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Geometry 3.G

Reason with shapes and their attributes.

1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.

Mathematics | Grade 4

In Grade 4, instructional time should focus on three critical areas: (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

(1) Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

(2) Students develop understanding of fraction equivalence and operations with fractions. They recognize that two different fractions can be equal (e.g., 15/9 = 5/3), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

(3) Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.

Grade 4 Overview

Operations and Algebraic Thinking

- Use the four operations with whole numbers to solve problems.
- Gain familiarity with factors and multiples.
- Generate and analyze patterns.

Number and Operations in Base Ten

- Generalize place value understanding for multi-digit whole numbers.
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations—Fractions

- Extend understanding of fraction equivalence and ordering.
- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
- Understand decimal notation for fractions, and compare decimal fractions.

Measurement and Data

- Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
- Represent and interpret data.
- Geometric measurement: understand concepts of angle and measure angles.

Geometry

- Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Operations and Algebraic Thinking 4.OA

Use the four operations with whole numbers to solve problems.

1 Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.1

3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Gain familiarity with factors and multiples.

4 Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

Generate and analyze patterns.

5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

Number and Operations in Base Ten[2] 4.NBT

Generalize place value understanding for multi-digit whole numbers.

1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*

2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

3 Use place value understanding to round multi-digit whole numbers to any place.

Use place value understanding and properties of operations to perform multi-digit arithmetic.

4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.

5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

[1] See Glossary, Table 2.

[2] Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000

Number and Operations—Fractions[1] 4.NF

Extend understanding of fraction equivalence and ordering.

1 Explain why a fraction *a*/*b* is equivalent to a fraction (*n* × *a*)/(*n* × *b*) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

3 Understand a fraction *a*/*b* with *a* > 1 as a sum of fractions 1/*b*.

a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.*

c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.

d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

a. Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).

b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)

c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*

Understand decimal notation for fractions, and compare decimal fractions.

5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.[2] *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*

[1] Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

[2] Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.

6 Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.

7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.

Measurement and Data 4.MD

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.

Represent and interpret data.

4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

Geometric measurement: understand concepts of angle and measure angles.

5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

   a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a “one-degree angle,” and can be used to measure angles.

   b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.

6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

7 Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

Geometry 4.G

Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.
3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

Mathematics | Grade 5

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

(1) Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing unit fractions by whole numbers and whole numbers by unit fractions.)

(2) Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication, and division. They apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

(3) Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve real world and mathematical problems.

Grade 5 Overview

Operations and Algebraic Thinking

- Write and interpret numerical expressions.
- Analyze patterns and relationships.

Number and Operations in Base Ten

- Understand the place value system.
- Perform operations with multi-digit whole numbers and with decimals to hundredths.

Number and Operations—Fractions

- Use equivalent fractions as a strategy to add and subtract fractions.
- Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Measurement and Data

- Convert like measurement units within a given measurement system.
- Represent and interpret data.
- Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Geometry

- Graph points on the coordinate plane to solve real-world and mathematical problems.
- Classify two-dimensional figures into categories based on their properties.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Operations and Algebraic Thinking 5.OA

Write and interpret numerical expressions.

1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.

Analyze patterns and relationships.

3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*

Number and Operations in Base Ten 5.NBT

Understand the place value system.

1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

3 Read, write, and compare decimals to thousandths.

a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).

b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

4 Use place value understanding to round decimals to any place.

Perform operations with multi-digit whole numbers and with decimals to hundredths.

5 Fluently multiply multi-digit whole numbers using the standard algorithm.

6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Number and Operations—Fractions 5.NF

Use equivalent fractions as a strategy to add and subtract fractions.

1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*

2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2*.

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

3 Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?

4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

   a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*

   b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

5 Interpret multiplication as scaling (resizing), by:

   a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

   b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.

6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[1]

   a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.

   b. Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.

[1] Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.

c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*

Measurement and Data 5.MD

Convert like measurement units within a given measurement system.

1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Represent and interpret data.

2 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*

Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.

b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.

4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.

b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems.

c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

Geometry 5.G

Graph points on the coordinate plane to solve real-world and mathematical problems.

1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate).

2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Classify two-dimensional figures into categories based on their properties.

3 Understand that attributes belonging to a category of two dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.

4 Classify two-dimensional figures in a hierarchy based on properties.

PRIMARY PRACTICAL LIVING
(HEALTH AND PHYSICAL EDUCATION)

Kentucky Core Academic Standards– Practical Living – Primary

Students in the primary health education program develop an understanding of the body functions as well as behaviors and decisions that will foster life-long health. Health literacy is assuming responsibility for personal health throughout the life cycle as related to good nutrition and personal health habits, sound safety practices, violence avoidance, and the use of refusal skills. Health education at this level enables students to acquire the knowledge, skills, and practices that should be a part of their daily routine throughout life.

Physical education addresses both health-related and skill-related components that promote enhanced health behaviors and increase responsible decision-making. Physical education uses physical activity as a means to help students acquire skills, fitness, knowledge, and attitudes that contribute to their optimal development and well-being.

Primary level physical education assists in the development of children's motor and fitness skills. Developing fundamental movement patterns is the focus of the physical education curriculum at the primary level. While developing fundamental skill patterns, the students will begin to learn key movement concepts that help them perform in a variety of educational games and dances. Students in the primary grades learn to move through space with objects and other individuals. They will learn how their bodies react to vigorous physical activity. Students will learn to use safe practices, cooperate with and respect others and follow classroom rules. Experiences in physical education will help develop a positive attitude for leading a healthy, active lifestyle.

The Health and Physical Education content standards at the primary level are directly aligned with Kentucky's **Academic Expectations.** The Health and Physical Education standards are organized around five "Big Ideas" that are important to the discipline of health and physical education. These big ideas are: Personal Wellness, Nutrition, Safety, Psychomotor Skills and Lifetime Physical Wellness. The Big Ideas are conceptual organizers for health and physical education and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to health and physical education. The understandings represent the desired results- what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lessons plans.

Skills and Concepts describe the ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for health and physical education are fundamental to health literacy and build on prior learning.

The health and physical education program provides a connection to Kentucky's Learning Goals 3 (self-sufficient individuals) and Learning Goal 4 (responsible group member), which are included in Kentucky statue, but they are not included in the state's academic assessment program. These connections provide a comprehensive link between essential content, skills and abilities important to learning. In addition Learning Goal 5 (think and solve problems) and Learning Goal 6 (connect and integrate knowledge) are addressed in health and physical education.

All physical education courses taught in the state of Kentucky must be in compliance with the Federal Special Education Law and Title IX and shall not include practice for or participation in interscholastic athletics.

Big Idea: Personal Wellness (Health Education)

Wellness is maximum well-being, or total health. Personal Wellness is a combination of physical, mental, emotional, spiritual and social well-being. It involves making choices and decisions each day that promote an individual's physical well-being, the prevention of illnesses and diseases, and the ability to remain, physically, mentally, spiritually, socially and emotionally healthy.

Academic Expectations

2.29 Students demonstrate skills that promote individual well-being and healthy family relationships.
2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.32 Students demonstrate strategies for becoming and remaining mentally and emotionally healthy.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
4.1 Students effectively use interpersonal skills.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating, and comparing to solve a variety of problems in real-life situations.
5.4 Students use a decision-making process to make informed decisions among options.

Primary Enduring Knowledge – Understandings

Students will understand that

- individuals have a responsibility to maintain a healthy lifestyle.
- changes are normal and each individual is unique in the growth and development process.
- responsibility to others enhances social interactions skills.
- media and use of technology (e.g., television, computers, MP3 Players, electronic/arcade games) can influence personal health.
- behavioral choices affect physical, mental, emotional and social well-being and can have positive or negative consequences on one's health.
- positive health habits can help prevent injuries and the spreading of diseases to self and others.

Primary Skills and Concepts – Personal and Physical Health

Students will

- demonstrate awareness of the concept of responsibility to oneself and others
- identify relationships between personal health behaviors and individual well-being
- describe how the family, physical and social environments influence personal health
- recognize indicators of mental/emotional, social, and physical health during childhood
- explain why growth and development are unique to each individual
- describe how diet, exercise, and rest affect the body

Big Idea: Personal Wellness (Health Education) – Continued

Primary Skills and Concepts – Social, Metal and Emotional Health
Students will

- demonstrate social interaction skills by:
  - using etiquette, politeness, sharing and other positive social interaction skills
  - working and playing collaboratively in large and small groups
  - using appropriate means to express needs, wants and feelings
  - describing characteristics needed to be a responsible friend and family member
  - practicing attentive listening skills that build and maintain healthy relationships
  - identifying the differences between verbal and nonverbal communication
  - identifying social interaction skills that enhance individual health
- explain how an individual's attitude can affect one's personal health
  - social health: getting along with others, serving as team members
  - emotional health: expressing feelings, self-concept
- define and identify ways to manage stress (e.g., exercise, drawing/writing/talking about feelings)

Primary Skills and Concepts – Family and Community Health
Students will

- describe ways technology and media influence:
  - family
  - feelings and thoughts
  - physical, social, and emotional health

Primary Skills and Concepts – Communicable, Non-Communicable and Chronic Diseases Prevention
Students will

- identify and practice personal health habits (e.g., hand washing, care of teeth and eyes, covering coughs and sneezes, sun protection) which affect self and others in the prevention and spread of disease
- describe the reasons for regular visits to health care providers

Primary Skills and Concepts – Alcohol, Tobacco and Other Drugs
Students will

- identify the differences between the use/misuse of alcohol, tobacco and other drugs and the effects they have on the body

Big Idea: Nutrition (Health Education)

Proper nutrition is critical to good health. To maintain a healthy weight, good dietary habits and physical activity are essential. Nutritious foods are necessary for growth, development and maintenance of healthy bodies.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
3.2 Students will demonstrate the ability to maintain a healthy lifestyle.
3.5 Students will demonstrate self-control and self-discipline.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating, and comparing to solve a variety of problems in real-life situations.
5.4 Students use decision-making process to make informed decisions among options.

Primary Enduring Knowledge – Understandings

Students will understand that

- proper nutrition is essential to growth and development.
- nutrients provide energy for daily living.
- resources are available to assist in making nutritional choices.

Primary Skills and Concepts

Students will

- explain why foods are needed by the body (growth, energy)
- identify the six nutrients
- investigate the role of the digestive system in nutrition
- describe the reasons why an individual needs to eat breakfast
- identify the food groups and the recommended number of daily servings to be eaten from each group
- apply the decision-making process in making healthful food choices

Big Idea: Safety (Health Education)

Accidents are a major cause of injury and death to children and adolescents. Unintentional injuries involving motor vehicles, falls, drowning, fires, firearms, and poisons can occur at home, school and work. Safe behavior protects a person from danger and lessens the effects of harmful situations.

Academic Expectations

2.3 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
3.2 Students will demonstrate the ability to maintain a healthy lifestyle.
4.3 Students individually demonstrate consistent, responsive, and caring behavior.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.1 Students use skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use a decision-making process to make informed decisions among-options.

Primary Enduring Knowledge – Understandings

Students will understand that

- safety practices and procedures help prevent injuries and provide a safe environment.
- community resources are available to assist in hazardous situations.

Primary Skills and Concepts

Students will

- explain and practice safety rules/procedures for crossing streets, riding in cars/buses, loading/unloading buses, and using playground equipment
- identify and explain how to help prevent injuries at home and at school (e.g., seat belts, helmets, knee pads)
- explain and demonstrate school and home safety procedures (e.g., tornado, fire, earthquake drills)
- demonstrate awareness of how to avoid danger (e.g., fires, strangers)
- identify procedures and practices for obtaining emergency assistance and information (e.g., fire department, police department, poison control, ambulance service, when to call 911)
- identify the available health and safety agencies in a community and the services they provide (e.g., health department, fire department, police, ambulance services)

Big Idea: Psychomotor Skills (Physical Education)

Cognitive information can be used to understand and enhance the development of motor skills such as movement sequences and patterns. Individuals who understand their bodies and how to perform various movements will be safer and more productive in recreation and work activities. Development of psychomotor skills contributes to the development of social and cognitive skills.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.34 Students perform physical movements skills effectively in a variety of settings.
2.35 Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.
4.1 Students effectively use interpersonal skills.

Primary Enduring Knowledge – Understandings

Students will understand that

- spatial awareness, motor skills and movement patterns are needed to perform a variety of physical activities.
- movement concepts, principles and strategies apply to the learning and performance of physical activities.

Primary Skills and Concepts

Students will

- demonstrate fundamental motor skills (e.g., locomotor, non-locomotor, object manipulation) and movement concepts (e.g., body control, space awareness)
- demonstrate fundamental motor skill aspects of performance
- utilize fundamental motor skills and movement concepts to create movement sequences
- demonstrate the contrast between slow and fast movements while traveling
- demonstrate relationships (e.g., over, under, front and back, side-by-side, leading and following) with other people and objects
- define the role personal and general space has in movement
- work in group settings without physically interfering with others
- develop basic manipulative skills (e.g., throwing, catching, kicking, striking)

Big Idea: Lifetime Physical Wellness (Physical Education)

Lifetime Wellness is health-focused. The health-related activities and content utilized are presented to help students become more responsible for their overall health status and to prepare each student to demonstrate knowledge and skills that promote physical activity throughout their lives. Physical education uses physical activity as a means to help students acquire skills, fitness, knowledge and attitudes that contribute to their optimal development and well-being. Physical, mental, emotional, and social health is strengthened by regular involvement in physical activities.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.34 Students perform physical movements skills effectively in a variety of settings.
2.35 Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.
3.1 Students demonstrate positive growth in self-concept through appropriate tasks or projects.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
3.7 Students demonstrate the ability to learn on one's own.
4.2 Students use productive team membership skills.

Primary Enduring Knowledge – Understandings

Students will understand that

- physical activity provides opportunities for social interaction, challenges, and fun.
- participation in regular physical activity has physical, mental, and social benefits.
- practice is a basic component for improving sport skills.
- rules impact effective participation in physical activities.
- personal and social behavior that shows respect to self and others impacts enjoyment and safety in physical activity settings.
- regular participation in health-related, physical activity supports the goals of fitness and a healthier lifestyle throughout life.

Primary Skills and Concepts

Students will

- identify likes and dislikes connected with participating in sports and physical activities (e.g., enjoyment, challenge, maintaining fitness, teamwork)
- identify benefits gained from regular participation in physical activities and describe activities that will promote a physically active lifestyle
- identify the physiological and psychological changes in the body during physical activity
- participate in daily physical activity during and after school
- explain the importance of practice for improving performance in games and sports for individuals
- when participating in a variety of physical activities and games:
  - explain why rules are used (e.g., safety, fairness)
  - differentiate between positive and negative behaviors (e.g., waiting your turn vs. pushing in line, honesty vs. lying)
  - practice cooperation strategies with partners and small groups
- demonstrate and describe the concept of sportsmanship (e.g., rules, fair play) in regard to games and activities
- identify and explain how spectator behaviors influence the safety and enjoyment of sports and games
- explore and identify a variety of physical activities that enhance the health related fitness components

PRIMARY SCIENCE

Kentucky Core Academic Standards – Science – Primary

The science program at the primary level should provide opportunities for students to think and work like scientists. Students must be provided multiple opportunities to observe and experience the world around them in order to develop scientific conceptions and abilities necessary to do scientific inquiry. These abilities include: (1) asking a question about objects, organisms and events in the environment, (2) planning and conducting a simple investigation/fair test, (3) using simple equipment and tools to gather data and extend the senses, (4) using data to construct a reasonable explanation and (5) communicating investigations and explanations.

Students should have opportunities to work individually and in groups of varying size and composition in order to conduct investigations, process information and discuss/debate important scientific concepts. Students must have regular opportunities to share their ideas with others and to test questions they generate as a result of their learning experiences.

In our technologically advanced society, information gathering must extend beyond the classroom walls and must involve a variety of credible sources. Scientists also place a high value on accurate record keeping and open communication of findings. The science classroom should mirror this by emphasizing multiple, varied and consistent methods of documenting and communicating learning.

The scientific content standards at the primary level are directly aligned with Kentucky's **Academic Expectations**. Science standards are organized around seven “Big Ideas” that are important to the discipline of science. These Big Ideas are: Structure and Transformation of Matter, Motion and Forces, The Earth and the Universe, Unity and Diversity, Biological Change, Energy Transformations and Interdependence. The Big Ideas are conceptual organizers for science and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of science. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and Concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for science are fundamental to scientific literacy, scientific inquiry and build on prior learning.

Effectively implementing the Kentucky Core Academic Standards requires a common understanding of some of the terms referenced throughout this document. These terms include:

> **Investigate/Explore-** compile a variety of information through hands-on experiences (utilizing process skills such as measuring, observing, questioning, classifying, predicting and inferring) and/or consult a variety of print and non-print media in order to formulate conclusions and/or gather evidence/data.
>
> **Experiment/Test-** conduct a scientifically valid and controlled investigation, collecting and analyzing data. Use findings and conclusions to form logical explanations and openly share.

Research- consult a variety of credible sources of information to gain knowledge, answer questions and support conclusions and explanations.

Model- represent a phenomenon or concept. Models are often conceptual in nature and the term ‘model’ does not always imply a physical product.

Big Idea: Structure and Transformation of Matter (Physical Science)

A basic understanding of matter is essential to the conceptual development of other big ideas in science. In the elementary years of conceptual development, students will be studying properties of matter and physical changes of matter at the macro level through direct observations, forming the foundation for subsequent learning. The use of models (and an understanding of their scales and limitations) is an effective means of learning about the structure of matter. Looking for patterns in properties is also critical to comparing and explaining differences in matter.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Primary Enduring Knowledge – Understandings

Students will understand that

- objects are made of one or more materials and investigating the properties of those materials helps in sorting and describing them.
- tools such as thermometers, magnifiers, rulers and balances can give more information about objects than can be obtained by just making observations.
- things can be done to materials to change some of their properties, but not all materials respond the same way to what is done to them.
- water can be a liquid, solid, or gas and can go back and forth from one form to another.
- in science, it is often helpful to work with a team and to share findings with others. All team members should reach their own individual conclusions, however, about what the findings mean.

Primary Skills and Concepts

Students will

- use senses to observe and describe properties of material objects (color, size, shape, texture, flexibility, magnetism)
- use appropriate tools (e.g., balance, metric ruler, thermometer, graduated cylinder) to measure and record length, width, volume, temperature and mass of material objects and to answer questions about objects and materials
- investigate the physical properties of water as a solid, liquid and gas
- classify water and other matter using one or more physical properties
- observe and predict the properties of material objects
- work with others to investigate questions about properties of materials, documenting and communicating observations, designs, procedures and results

Big Idea: Motion and Forces (Physical Science)

Whether observing airplanes, baseballs, planets, or people, the motion of all bodies is governed by the same basic rules. In the elementary years of conceptual development, students need multiple opportunities to experience, observe, and describe (in words and pictures) motion, including factors (e.g., pushing, pulling) that affect motion.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

Primary Enduring Knowledge – Understandings

Students will understand that

- things move in many different ways (e.g., fast and slow, back and forth, straight, zig zag, etc.).
- forces (pushes or pulls) can cause objects to start moving, go faster, slow down, or change the direction they are going.
- the position of an object can be described by locating it relative to another object or the background.
- vibration is a type of motion that is responsible for making sound.
- magnetism is a force that can make some things move without touching them.
- discovering patterns through investigation/observation allows predictions, based on that evidence, to be made about future events.

Primary Skills and Concepts

Students will

- identify points of reference/reference objects in order to describe the position of objects
- observe and describe (e.g., using words, pictures, graphs) the change in position over time (motion) of an object
- make qualitative (e.g., hard, soft, fast, slow) descriptions of pushes/pulls and motion
- use tools (e.g., timer, meter stick, balance) to collect data about the position and motion of objects in order to predict changes resulting from pushes and pulls
- explore differences in sounds (high and low pitch) produced by vibrations (e.g., making musical instruments that have moving parts that vibrate to produce sound)
- observe interactions of magnets with other magnets and with other matter (e.g., magnets have a force that can make some things move without touching them; larger size of a magnet does not have to mean it has greater force) in order to make generalizations about the behavior of magnets
- use standard units of measurement (e.g., meters, inches, seconds) during investigations to evaluate/compare results
- ask questions about motion, magnetism and sound and use a variety of print and non-print sources to gather and synthesize information

Big Idea: The Earth and the Universe (Earth/Space Science)

The Earth system is in a constant state of change. These changes affect life on earth in many ways. Development of conceptual understandings about processes that shape the Earth begin at the elementary level with understanding what Earth materials are and that change occurs. At the heart of elementary students' initial understanding of the Earth's place in the universe is direct observation of the Earth-sun-moon system. Students can derive important conceptual understandings about the system as they describe interactions resulting in shadows, moon phases, and day and night. The use of models and observance of patterns to explain common phenomena is essential to building a conceptual foundation and supporting ideas with evidence at all levels.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

Primary Enduring Knowledge – Understandings

Students will understand that

- people use a variety of earth materials for different purposes because of their different properties. All products that people use somehow come from the Earth.
- some events in nature have a repeating pattern. Weather changes from day to day, but things such as temperature or precipitation tend to be similar (high, medium or low) in the same months every year.
- the sun, moon and stars appear to move slowly across the sky at different speeds and we can see patterns in their movement with careful observation.
- the sun can only be seen in the daytime. The moon can sometimes be seen during the day and sometimes be seen at night and its shape changes in a predictable pattern.
- observable interactions of the sun, moon and the Earth can be used to identify the apparent pattern of their movement.
- raising questions about the Earth and the Universe and seeking answers to some of them (by careful observation and/or investigation) is what science is all about.

Primary Skills and Concepts

Students will

- use senses and scientific tools (e.g., hand lens/magnifier, metric ruler, balance, etc.) to observe, describe and classify earth materials (solid rocks, soils, water and air) using their physical properties
- explore how earth materials are used for certain things because of their properties
- observe weather conditions and record weather data over time using appropriate tools (e.g., thermometer, wind vane, rain gauge, etc.)
- use weather data to describe weather conditions and make simple predictions based on patterns observed (e.g., daily, weekly, seasonal patterns)
- observe the locations and real or apparent movements of the sun and the moon
- investigate evidence of interaction between the sun and the Earth (e.g., shadows, position of sun relative to horizon) to support inferences about movements in the Earth/Sun system
- communicate observations, investigations and conclusions orally and with written words, charts and diagrams

Big Idea: Unity and Diversity (Biological Science)

All matter is comprised of the same basic elements, goes through the same kinds of energy transformations, and uses the same kinds of forces to move. Living organisms are no exception. Elementary students begin to observe the macroscopic features of organisms in order to make comparisons and classifications based upon likenesses and differences. Looking for patterns in the appearance and behavior of an organism leads to the notion that offspring are much like the parents, but not exactly alike. Emphasis at every level should be placed upon the understanding that while every living thing is composed of similar small constituents that combine in predictable ways, it is the subtle variations within these small building blocks that account for both the likenesses and differences in form and function that create the diversity of life.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

Primary Enduring Knowledge – Understandings

Students will understand that

- most living things need water, food and air, while nonliving things can continue to exist without any requirements.
- plants and animals have features that help them live in different environments.
- some animals are alike in the way they look and in the things they do, and others are very different from one another.
- the offspring all living things are very much like their parents, but not exactly alike.
- organisms may not be able to survive if some of their parts are missing.

Primary Skills and Concepts

Students will

- describe the basic needs of organisms and explain how these survival needs can be met only in certain environments
- identify the characteristics that define a habitat
- investigate adaptations that enable animals and plants to grow, reproduce and survive (e.g., movements, body coverings, method of reproduction)
- analyze structures of plants and animals to make inferences about the types of environments for which they are suited
- use scientific tools (e.g., hand lens/magnifier, metric ruler, balance) to observe and make comparisons of organisms; and to classify organisms using one or more of their external characteristics (e.g., body coverings, body structures)
- analyze and compare a variety of plant and animal life cycles in order to uncover patterns of growth, development, reproduction and death of an organism
- ask questions that can be investigated, plan and conduct ‘fair tests,’ and communicate (e.g., write, draw, speak, multi-media) findings to others

Big Idea: Biological Change (Biological Science)

The only thing certain is that everything changes. Elementary students build a foundational knowledge of change by observing slow and fast changes caused by nature in their own environment, noting changes that humans and other organisms cause in their environment, and observing fossils found in or near their environment.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.6 Students understand how living and nonliving things change over time and the factors that influence the changes.

Primary Enduring Knowledge – Understandings

Students will understand that

- fossils found in Earth materials indicate that organisms and environmental conditions may have been different in the past.
- living things are found almost everywhere on our planet, but organisms living in one place may be different from those found somewhere else.
- some changes are so slow or so fast that they are hard to see.
- things change in some ways and stay the same in some ways.

Primary Skills and Concepts

Students will

- identify and describe evidence of organisms that no longer exist (fossils)
- examine fossils/representations of fossils and make comparisons between organisms that lived long ago and organisms of today (e.g., compare a fern to a fossil of a fern-like plant)
- make inferences about the basic environments represented by fossils found in earth materials (e.g., fossils of fish skeletons represent an aquatic environment)
- investigate and describe occurrences in the environment that illustrate change (e.g., erosion, earthquakes, weather phenomena, human intrusion)
- compare fossils, plants and animals from similar environments in different geographic locations
- describe in words, pictures and/or measurements, changes that occur quickly (e.g., puddles forming from rain, cutting hair, burning paper) and changes that occur more slowly (e.g., hair growing, water evaporating in an open container, growing in height), noting the factors that influence the change

Big Idea: Energy Transformations (Unifying Concepts)

Energy transformations are inherent in almost every system in the universe—from tangible examples at the elementary level, such as heat production in simple earth and physical systems to more abstract ideas beginning at middle school, such as those transformations involved in the growth, dying and decay of living systems. The use of models to illustrate the often invisible and abstract notions of energy transfer will aid in conceptualization, especially as students move from the macroscopic level of observation and evidence (primarily elementary school) to the microscopic interactions at the atomic level (middle and high school levels).

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Primary Enduring Knowledge – Understandings

Students will understand that

- energy makes things move, grow or work. Everything that changes uses energy to make those changes happen. Sometimes evidence of these changes can be seen, but not always.
- almost all kinds of food that animals eat can be traced back to plants. Food chains/webs are useful models of these relationships.
- the sun warms the air, land and water, and lights the Earth.
- light can be observed to determine how it travels and how it interacts with different materials (e.g. reflects, is absorbed, passes through).
- electricity can only flow when it has a closed path (circuit) to follow. Closed electric circuits can produce light and sound.

Primary Skills and Concepts

Students will

- identify examples and sources of energy
- create or interpret sketches, diagrams, 3-dimensional constructions and concept maps as models that can be used to represent things that can be seen, cannot be seen, or cannot be seen easily or in their entirety
- observe, illustrate and explain basic relationships of plants and animals in an ecosystem (e.g., use simple food chains and webs to explain how plants and animals get food/energy to live and grow)
- observe and describe evidence of the sun providing light and heat to the Earth
- demonstrate open and closed circuits using batteries, bulbs and wires and analyze models of basic electrical circuits in order to determine whether a simple circuit is open or closed
- investigate light traveling in a straight line until striking an object by observing the shapes of the shadows that are produced
- explore a variety of models (e.g., food chains, webs, circuit diagrams) to infer whether the representation is complete or only part of the actual event/object

Big Idea: Interdependence (Unifying Concepts)

It is not difficult for students to grasp the general notion that species depend on one another and on the environment for survival. But their awareness must be supported by knowledge of the kinds of relationships that exist among organisms, the kinds of physical conditions that organisms must cope with, the kinds of environments created by the interaction of organisms with one another and their physical surroundings, and the complexity of such systems. Elementary learners need to become acquainted with ecosystems that are easily observable to them by beginning to study the habitats of many types of local organisms. Students begin to investigate the survival needs of different organisms and how the environment affects optimum conditions for survival.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Primary Enduring Knowledge – Understandings

Students will understand that

- the world has many different environments. Distinct environments support the lives of different types of organisms.
- when the environment changes, some plants and animals survive and reproduce, and others die or move to new locations.

Primary Skills and Concepts

Students will

- identify the characteristics of an ecosystem
- observe, document and explain how organisms depend on their environments
- describe and explain how the environment can be affected by the organisms living there
- describe how changes in an environment might affect plants' and animals' ability to survive
- ask questions that can be explored using a variety of appropriate print and non-print resources (e.g., why certain plants cannot survive in a particular area; why some animals are endangered or extinct; why some areas are 'protected')

PRIMARY SOCIAL STUDIES

Kentucky Core Academic Standards– Social Studies – Primary

The social studies program in primary includes connections to literature, active, hands-on work with concrete materials and appropriate technologies. Although the social studies program for primary is divided into five areas, each area is designed to interact with the others in an integrated fashion. Because of this integration, students are able to develop broad conceptual understandings in social studies. This style of learning reflects the developmental nature of children.

The primary purpose of social studies is to help students develop the ability to make informed decisions as citizens of a culturally diverse, democratic society in an interdependent world. The skills and concepts found throughout this document reflect this purpose by promoting the belief that students must develop more than an understanding of social studies content. They must also be able to apply the content perspectives of several academic fields of the social studies to personal and public experiences. By stressing the importance of both content knowledge and its application, the social studies curriculum in Kentucky provides a framework that prepares students to become productive citizens.

The social studies content standards at the primary level are directly aligned with Kentucky's **Academic Expectations**. Social Studies standards are organized around five “Big Ideas” that are important to the discipline of social studies. The five Big Ideas in social studies are: Government and Civics, Cultures and Societies, Economics, Geography and Historical Perspective. The Big Ideas, which are more thoroughly explained in the pages that follow, are conceptual organizers that are the same at each grade level. This consistency ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of social studies. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for social studies are fundamental to social studies literacy and build on prior learning.

The social studies program includes strong literacy connections, active hands-on work with concrete materials, and appropriate technologies. The social studies curriculum includes and depends on a number of different types of materials such as textbooks, non-fiction texts, biographies, autobiographies, journals, maps, newspapers, photographs and primary documents. Higher order thinking skills, such as compare, explain, analyze, predict, construct and interpret, are all heavily dependent on a variety of literacy skills and processes. For example, in social studies students must be able to understand specialized vocabulary, identify and comprehend key pieces of information within texts, determine what is fact and what is opinion, relate information across texts, connect new information to prior knowledge and synthesize the information to make meaning.

Big Idea: Government and Civics

The study of government and civics equips students to understand the nature of government and the unique characteristics of American representative democracy, including its fundamental principles, structure and the role of citizens. Understanding the historical development of structures of power, authority and governance and their evolving functions in contemporary U.S. society and other parts of the world is essential for developing civic competence. An understanding of civic ideals and practices of citizenship is critical to full participation in society and is a central purpose of the social studies.

Academic Expectations

2.14 Students understand the democratic principles of justice, equality, responsibility, and freedom and apply them to real-life situations.

2.15 Students can accurately describe various forms of government and analyze issues that relate to the rights and responsibilities of citizens in a democracy.

Primary Enduring Knowledge – Understandings

Students will understand that

- local governments are formed to establish order, provide security and accomplish common goals.
- citizens of local communities have certain rights and responsibilities in a democratic society.
- local communities promote the basic principles (e.g., liberty, justice, equality, rights, responsibilities) of a democratic form of government.

Primary Skills and Concepts

Students will

- demonstrate (e.g., speak, draw, write) an understanding of the nature of government:
  - explain basic functions (to establish order, to provide security and accomplish common goals) of local government
  - explore and give examples of the services (e.g., police and fire protection, maintenance of roads, snow removal, garbage pick-up)
  - investigate how the local government pays for services (by collecting taxes from people who live there)
  - explain the reasons for rules in the home and at school; and compare rules (e.g., home, school) and laws in the local community
  - investigate the importance of rules and laws and give examples of what life would be like without rules and laws (home, school, community)
- explore personal rights and responsibilities:
  - explain, demonstrate, give examples of ways to show good citizenship at school and in the community (e.g., recycling, picking up trash)
  - describe the importance of civic participation and locate examples (e.g., donating canned food to a class food drive) in current events/news
- use a variety of print and non-print sources (e.g., stories, books, interviews, observations) to identify and describe basic democratic ideas (e.g., liberty, justice, equality, rights, responsibility)

Big Idea: Cultures and Societies

Culture is the way of life shared by a group of people, including their ideas and traditions. Cultures reflect the values and beliefs of groups in different ways (e.g., art, music, literature, religion); however, there are universals connecting all cultures. Culture influences viewpoints, rules and institutions in a global society. Students should understand that people form cultural groups throughout the United States and the World, and that issues and challenges unite and divide them.

Academic Expectations

2.16 Students observe, analyze, and interpret human behaviors, social groupings, and institutions to better understand people and the relationships among individuals and among groups.

2.17 Students interact effectively and work cooperatively with the many ethnic and cultural groups of our nation and world.

Primary Enduring Knowledge – Understandings

Students will understand that

- culture is a system of beliefs, knowledge, institutions, customs/traditions, languages and skills shared by a group of people.
- cultures develop social institutions (e.g., government, economy, education, religion, family) to structure society, influence behavior, and respond to human needs.
- interactions among individuals and groups assume various forms (e.g., compromise, cooperation, conflict, competition).
- a variety of factors promote cultural diversity in a community.
- an understanding and appreciation of the diverse complexity of cultures is essential to interact effectively and work cooperatively with the many diverse ethnic and cultural groups of today.

Primary Skills and Concepts

Students will

- develop an understanding of the nature of culture:
  - explore and describe cultural elements (e.g., beliefs, traditions, languages, skills, literature, the arts)
  - investigate diverse cultures using print and non-print sources (e.g., stories, books, interviews, observations)
- investigate social institutions (e.g., schools) in the community
- describe interactions (e.g., compromise, cooperation, conflict, competition) that occur between individuals/groups
- describe and give examples of conflicts and conflict resolution strategies

Big Idea: Economics

Economics includes the study of production, distribution, and consumption of goods and services. Students need to understand how their economic decisions affect them, others and the nation as a whole. The purpose of economic education is to enable individuals to function effectively both in their own personal lives and as citizens and participants in an increasingly connected world economy. Students need to understand the benefits and costs of economic interaction and interdependence among people, societies and governments.

Academic Expectations

2.18 Students understand economic principles and are able to make economic decisions that have consequences in daily living.

Primary Enduring Knowledge – Understandings

Students will understand that

- the basic economic problem confronting individuals and groups in our community today is scarcity; as a result of scarcity economic choices and decisions must be made.
- a variety of fundamental economic concepts (e.g., supply and demand, opportunity cost) impact individuals, groups and businesses in the community today.
- economic institutions are created to help individuals, groups and businesses in the community accomplish common goals.
- markets enable buyers and sellers to exchange goods and services.
- production, distribution and consumption of goods and services in the community have changed over time.
- individuals, groups and businesses in the community demonstrate interdependence as they make economic decisions about the use of resources (e.g., natural, human, capital) in the production, distribution, and consumption of goods and services.

Primary Skills and Concepts

Students will

- develop an understanding of the nature of limited resources and scarcity:
  - investigate and give examples of resources
  - explain why people cannot have all the goods and services they want
  - solve economic problems related to prioritizing resources, saving, loaning and spending money
  - explore differences between limited natural resources and limited human resources
- investigate banks in the community and explain how they help people (e.g., loan money, save money)
- compare ways people in the past/present acquired what they needed, using basic economic terms related to markets (e.g., goods, services, profit, consumer, producer, supply, demand, buyers, sellers, barter)
- describe and give examples of production, distribution and consumption of goods and services in the community

Big Idea: Geography

Geography includes the study of the five fundamental themes of location, place, regions, movement and human/environmental interaction. Students need geographic knowledge to analyze issues and problems to better understand how humans have interacted with their environment over time, how geography has impacted settlement and population, and how geographic factors influence climate, culture, the economy and world events. A geographic perspective also enables students to better understand the past and present and to prepare for the future.

Academic Expectations

2.19 Students recognize and understand the relationship between people and geography and apply their knowledge in real-life situations.

Primary Enduring Knowledge – Understandings

Students will understand that

- the use of geographic tools (e.g., maps, globes, charts, graphs) and mental maps help to locate places, recognize patterns and identify geographic features.
- patterns emerge as humans move, settle and interact on Earth's surface and can be identified by examining the location of physical and human characteristics, how they are arranged and why they are in particular locations.
- people depend on, adapt to, and/or modify the environment to meet basic needs. Human actions modify the physical environment and in turn, the physical environment limits and/or promotes human activities.

Primary Skills and Concepts

Students will

- develop an understanding of patterns on the Earth's surface using a variety of geographic tools (e.g., maps, globes, charts, graphs):
  - locate and describe familiar places at school and the community
  - create maps that identify the relative location of familiar places and objects (e.g., school, neighborhood)
  - identify major landforms (e.g., continents, mountain ranges) and major bodies of water (e.g., oceans, rivers)
- investigate the Earth's surface using print and non-print sources (e.g., books, magazines, films, Internet, geographic tools):
  - locate and describe places (e.g., local environments, different habitats) using their physical characteristics (e.g., landforms, bodies of water)
  - identify and explain patterns of human settlement in different places
- compare ways people and animals modify the physical environment to meet their basic needs (e.g., clearing land to build homes versus building nests and burrows as shelters)
- recognize how technology helps people move, settle, and interact in the world

Big Idea: Historical Perspective

History is an account of events, people, ideas and their interaction over time that can be interpreted through multiple perspectives. In order for students to understand the present and plan for the future, they must understand the past. Studying history engages students in the lives, aspirations, struggles, accomplishments, and failures of real people. Students need to think in an historical context in order to understand significant ideas, beliefs, themes, patterns and events, and how individuals and societies have changed over time in Kentucky, the United States and the World.

Academic Expectations

2.20 Students understand, analyze, and interpret historical events, conditions, trends, and issues to develop historical perspective.

Primary Enduring Knowledge – Understandings

Students will understand that

- history is an account of human activities that is interpretive in nature. A variety of tools (e.g., primary and secondary sources) are needed to understand historical events.
- history is a series of connected events shaped by multiple cause-effect relationships, tying past to present.
- history has been impacted by significant individuals and groups.

Primary Skills and Concepts

Students will

- develop an understanding of the nature of history using a variety of tools (e.g., primary and secondary sources, family mementoes, artifacts, Internet, diaries, timelines, maps):
  - examine the past (of selves and the community)
  - distinguish among past, present and future people, places, events
  - explain why people move and settle in different places; explore the contributions of diverse groups
- use print and non-print sources (e.g., stories, folktales, legends, films, magazines, Internet, oral history):
  - investigate and give examples of factual and fictional accounts of historical events
  - explore and give examples of change over time (e.g., transportation, clothing, communication, technology, occupations)
- investigate the significance of patriotic symbols, patriotic songs, patriotic holidays and landmarks (e.g., the flag of the United States, the song “My Country, ‘Tis of Thee,” the Fourth of July, Veterans’ Day, the Statue of Liberty)

PRIMARY TECHNOLOGY

Kentucky Core Academic Standards – Technology – Primary

Technology use in the 21st century has become a vital component of all aspects of life. For students in Kentucky to be contributing citizens, they must receive an education that incorporates technology literacy at all levels. Technology literacy is the ability of students to responsibly use appropriate technology to communicate, solve problems, and access, manage, integrate, evaluate, and create information to improve learning in all subject areas and to acquire lifelong knowledge and skills in the 21st century. The Technology Kentucky Core Academic Standards provides a framework for integrating technology into all content areas. It reflects the basic skills required for each student to be competitive in the global economy.

For students to gain the technology competencies, it is essential that they have access to technology during the school day in all grade levels. Instruction should provide opportunities for students to gain and demonstrate technology skills that build primary through grade 12.

The technology content standards should be integrated into each curricular discipline. The purpose of integrating technology is to help students make useful connections between what they learn in each content area and the real world. Technology knowledge, concepts and skills should be interwoven into lessons or units and taught in partnership with other content areas. Technology lends itself to curriculum integration and team teaching. Technology can enhance learning for all students, and for some it is essential for access to learning.

The technology content standards are organized by grade spans: primary, intermediate, middle, and high. The technology Kentucky Core Academic Standards at the primary level includes beginning competencies related to technology literacy. Students are involved in the use of technology for communicating and collaborating with others and in developing ideas and opinions. Students interact with developmentally appropriate applications (e.g., interactive books, graphic organizers, reading and writing assistants, mathematical and scientific tools). Through this experience, students gain a positive view of technology as tools for learning.

The technology content standards at the primary grade span are directly aligned with Kentucky's **Academic Expectations**. Technology standards are organized around three Big Ideas that are important to the discipline of technology. The three Big Ideas in technology are: **1) Information, Communication and Productivity; 2) Safety and Ethical/Social Issues;** and **3) Research, Inquiry/Problem-Solving and Innovation**. The Big Ideas are conceptual organizers for technology. Each grade level span ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of *Enduring Knowledge/Understandings* that represent overarching generalizations linked to the Big Ideas of Technology. The understandings represent the desired results--what learning will focus upon and what knowledge students will be able to explain or apply. *Understandings* can be used to frame development of units of study and lesson plans.

Skills and Concepts describe ways that students demonstrate their learning and are specific to each grade level span. The skills and concepts for technology are fundamental to technology literacy, safe use and inquiry.

Big Idea: Information, Communication and Productivity

Students demonstrate a sound understanding of the nature and operations of technology systems. Students use technology to learn, to communicate, to increase productivity and become competent users of technology. Students manage and create effective oral, written and multimedia communication in a variety of forms and contexts.

Academic Expectations

1.11 Students write using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.16 Students use computers and other kinds of technology to collect, organize, and communicate information and ideas.
3.3 Students demonstrate the ability to be adaptable and flexible through appropriate tasks or projects.
6.1 Students connect knowledge and experiences from different subject areas.
6.3 Students expand their understanding of existing knowledge by making connections with new knowledge, skills and experiences.

Primary Enduring Knowledge – Understandings

Students will understand that

- technology is used in all content areas to support directed and independent learning.
- appropriate terminology, computer operations and applications assist in gaining confidence in the use of technology.
- technology requires proper care and maintenance to be used effectively.
- technology is used to communicate in a variety of ways.

Primary Skills and Concepts – Information

Students will

- investigate different technology devices and systems (e.g., computer processor unit, monitor, keyboard, disk drive, printer, mouse, digital cameras, interactive white boards)
- use and care for technology (e.g., computers, cell phones, digital cameras, scanners, multimedia) at home, school and community
- use appropriate technology terms (e.g., hardware, software, CD, hard drive)
- demonstrate proper keyboarding techniques, optimal posture and correct hand placement (e.g., left hand for left side keys and right hand for right side keys, special keys such as space bar, enter/return, backspace, shift, delete)

Primary Skills and Concepts – Communication

Students will

- use technology to communicate in a variety of modes (e.g., recordings, speech to text, print, media)
- participate in group projects and learning activities using technology communications

Primary Skills and Concepts – Productivity

Students will

- explain how information can be published and presented in different formats
- create a variety of tasks using technology devices and systems to support authentic learning

Big Idea: Safety and Ethical/Social Issues

Students understand safe and ethical/social issues related to technology. Students practice and engage in safe, responsible and ethical use of technology. Students develop positive attitudes toward technology use that supports lifelong learning, collaboration, personal pursuits and productivity.

Academic Expectations

2.17 Students interact effectively and work cooperatively with the many ethnic and cultural groups of our nation and world.
3.6 Students demonstrate the ability to make decisions based on ethical values.
4.3 Students individually demonstrate consistent, responsive and caring behavior.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
4.5 Students demonstrate an understanding of, appreciation for, and sensitivity to a multi-cultural and world view.

Primary Enduring Knowledge – Understandings

Students will understand that

- responsible and ethical use of technology is necessary to ensure safety.
- technology enhances collaboration to contribute to a learning community.
- acceptable technology etiquette is essential to respectful social interactions and good citizenship.
- technology is used in jobs and careers to support the needs of the community.
- assistive technology supports learning to ensure equitable access to a productive life.

Primary Skills and Concepts – Safety

Students will

- explain the importance of safe Internet use (e.g., iSafe skills)
- use safe behavior when using technology

Primary Skills and Concepts – Ethical Issues

Students will

- use responsible and ethical behavior in using technology
- adhere to the Acceptable Use Policy (AUP) as well as other state and federal laws

Primary Skills and Concepts – Social Issues

Students will

- work cooperatively with peers, family members and others when using technology
- collaborate with peers, family members and others when using technology
- explain how technology is used in jobs and careers

Big Idea: Research, Inquiry/Problem-Solving and Innovation

Students understand the role of technology in research and experimentation. Students engage technology in developing solutions for solving problems in the real world. Students will use technology for original creation and innovation.

Academic Expectations

1.1 Students use reference tools such as dictionaries, almanacs, encyclopedias, and computer reference programs and research tools such as interviews and surveys to find the information they need to meet specific demands, explore interests, or solve specific problems.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating, and comparing to solve a variety of problems in real-life situations.

5.2 Students use creative thinking skills to develop or invent novel, constructive ideas or products.

5.4 Students use a decision-making process to make informed decisions among options.

5.5 Students use problem-solving processes to develop solutions to relatively complex problems.

6.1 Students connect knowledge and experiences from different subject areas.

Primary Enduring Knowledge – Understandings

Students will understand that

- technology assists in gathering, organizing and evaluating information from a variety of sources to answer an essential question.
- technology is used to analyze real world data and support critical thinking skills through inquiry/problem-solving in order to produce results and make informed decisions.

Primary Skills and Concepts – Research

Students will

- use teacher-directed Internet sources as a resource for information
- use electronic resources to access and retrieve information

Primary Skills and Concepts – Inquiry/Problem-solving

Students will

- gather technology information/data and use for problem solving in all content areas
- describe at least one strategy for problem solving while using technology (e.g., inquiry/problem-solving software, troubleshooting technology issues)

Primary Skills and Concepts – Innovation

Students will

- use technology for original creations/innovation in classroom
- express creativity both individually and collaboratively using technology

PRIMARY VOCATIONAL STUDIES

Kentucky Core Academic Standards – Vocational Studies – Primary

The vocational studies program in the primary level develops an awareness of careers. This awareness includes the purpose of having a job, concepts of consumer decision-making, saving money, and connections between work and learning. The challenge is to empower students to make a connection between school and the world of work and to be productive citizens.

The primary level provides appropriate opportunities for students to be involved in activities designed to develop an appreciation of work and an awareness of self and jobs/careers. They should examine the relationship between school studies and work; this will enable them to make vital connections that will give meaning to their learning. Elementary students should begin to develop work habits, study skills, team skills and set short-term goals.

The vocational studies program at the primary level includes active, hands-on work with concrete materials and appropriate technologies. Although the vocational studies program for primary level is divided into five areas, each area is designed to interact with the others in an integrated fashion. Because of this integration, students are able to develop broad conceptual understandings in vocational studies. All content teachers are responsible for providing instruction in the Vocational Studies area.

The vocational studies content standards at the primary level are directly aligned with Kentucky's **Academic Expectations.** The vocational studies standards are organized around five "Big Ideas" that are important to the discipline of vocational studies. These big ideas are: Consumer Decisions, Financial Literacy, Career Awareness/Exploration/Planning, Employability Skills, and Communication/Technology. The Big Ideas are conceptual organizers for vocational studies and are the same at each grade level. This ensures students have multiple opportunities throughout their school career to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of vocational studies. The understandings represent the desired results- that focus on learning, and the knowledge students will have to explain or apply. Understandings can be used to frame development of units of study and lessons plans.

Skills and concepts describe the ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for vocational studies are fundamental to career awareness and builds on prior learning.

Academic Expectations 2.36 and 2.37 bring forward the career awareness in Vocational Studies. Vocational Studies provide a connection to Kentucky Learning Goal 3 (become self-sufficient individual) and Learning Goal 4 (become a responsible group members). These connections provide a comprehensive link between essential content, skills and abilities important to learning.

Big Idea: Consumer Decisions

Individual and families need to make consumer decisions due to the numerous products/services on the market, multiple advertising techniques, and the need to make responsible financial management decisions. Accessing and assessing consumer information, comparing and evaluating products and services, provides basis for making effective consumer decisions. Consumer decisions influence the use of resources and the impact they have on the community and environment.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
5.4 Students use a decision-making process to make informed decisions among options.

Primary Enduring Knowledge – Understandings

Students will understand that

- basic economic concepts are important for consumer decision-making.
- consumer decisions are influenced by economic and social factors.
- consumer actions (e.g., reusing, reducing, recycling) influence the use of resources and impact the environment.

Primary Skills and Concepts

Students will

- develop an understanding of how consumer decisions are influenced by economic and social factors by:
  - recognizing that consumers are people whose wants are satisfied by using goods and services
  - recognizing that producers are people who make goods and provide services
  - describing the steps in making consumer decisions
  - identifying the difference between wants and needs (e.g., food, clothing, and shelter) and the relationship to consumer decisions
  - describing major factors (e.g., price, quality, features) to consider when making consumer decisions
  - defining barter, giving examples of bartering (e.g., trading baseball cards with each other), and explaining how money makes it easier for people to get things they want
  - recognizing the relationship between supply and demand and the dependence one has on others to provide for wants and needs
  - identifying the ways friends may influence your decisions when making purchases
  - recognizing how media and advertising affect consumer decisions
- investigate media advertisements and newspaper stories that influence consumer decisions
- explore and use technology to access information as a consumer
- describe how consumer actions (e.g., reusing, reducing, recycling) influence the use of resources and impact the environment by:
  - describing some community activities that promote healthy environments

Big Idea: Financial Literacy

Financial literacy provides knowledge so that students are responsible for their personal economic well-being. As consumers, individuals need economic knowledge as a base for making financial decisions impacting short and long term goals throughout one's lifetime. Financial literacy will empower students by providing them with the skills and awareness needed to establish a foundation for a future of financial responsibility and economic independence.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
5.4 Students use a decision-making process to make informed decisions among options.

Primary Enduring Knowledge – Understandings

Students will understand that

- financial decisions impact the achievement of short and long-term goals.
- saving money is a component of financial decision-making.

Primary Skills and Concepts

Students will

- identify goals pertaining to money that might affect individuals and families
- investigate different ways to save money (e.g., piggy bank, local bank, savings bonds)

Big Idea: Career Awareness, Exploration, Planning

Career awareness, exploration and planning gives students the opportunity to discover the various career areas that exist and introduce them to the realities involved with the workplace. Many factors need to be considered when selecting a career path and preparing for employment. Career awareness, exploration and planning will enable students to recognize the value of education and learn how to plan for careers. The relationship between academics and jobs/careers will enable students to make vital connections that will give meaning to their learning.

Academic Expectations

2.36 Students use strategies for choosing and preparing for a career.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
5.4 Students use a decision-making process to make informed decision among options.

Primary Enduring Knowledge – Understandings

Students will understand that

- people need to work to meet basic needs.
- the connection between work and learning can influence one's future job/career.

Primary Skills and Concepts

Students will

- communicate the concepts of work and career
- examine and group careers found in the community
- identify that people need to work (e.g., chores, jobs, employment) to meet basic needs (e.g., food, clothing, shelter)
- describe the different job opportunities are available in the community
- explain different jobs/careers that use what they learn in school (e.g., mathematics, reading/writing, science, social studies) impacts future jobs/careers

Big Idea: Employability Skills

Employability skills will focus on student's competencies with their work habits and academic/technical skills that will impact an individual's success in school and workplace. School-to-work transition skills will help students develop interpersonal skills and positive work habits.

Academic Expectations

2.36 Students use strategies for choosing and preparing for a career.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
3.6 Students demonstrate the ability to make decisions based on ethical values.
4.1 Students effectively use interpersonal skills.
4.2 Students use productive team membership skills.

Primary Enduring Knowledge – Understandings

Students will understand that

- interpersonal skills are needed to be a responsible friend, family and team member.
- attitudes and work habits contribute to success at home, school and work.

Primary Skills and Concepts

Students will

- identify how interpersonal skills are needed to be a responsible friend, family and team member by:
  - identifying ways to cooperate at both home and school
  - learning the importance of working with others in groups
  - demonstrating how to work cooperatively by contributing ideas, suggestions and efforts
- describe how attitudes and work habits contribute to success at home, school and work by:
  - describing study skills needed in the school
  - describing how attitude can impact an individual's performance at school
  - learning how to follow routines (e.g., rules, schedules, directions) with minimal supervision
- describe the importance of working hard and efficiently (e.g., taking pride in one's work, being on task)
- examine potential job/careers in the community

Big Idea: Communication/Technology

Special communication/technology skills are needed for success in schooling and in the workplace. Students will be able to express information and ideas using a variety of technologies in various ways.

Academic Expectations

1.16 Students use computers and other kinds of technology to collect, organize, and communicate information and ideas.

2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.

Primary Enduring Knowledge – Understandings

Students will understand that

- technology in school and the workplace can enhance learning and provide access to information and resources.
- communication skills are essential for jobs/careers.

Primary Skills and Concepts

Students will

- explore how technology is used in different jobs/careers
- investigate how technology in school and at work enhances learning and provide access to information and resources by:
  - identifying technology tools (e.g., electronic games, phones, computers) that are used in homes and schools
- identify ways written communication skills are used at school and in the workplace

INTERMEDIATE EDUCATION

Intermediate Education

The intermediate grades, most often viewed as grades four and five, build upon the integrated approach to curriculum that begins in a student's primary years. The intermediate program sets high expectations for all students through a rigorous curriculum that focuses on *Kentucky's Learning Goals*, *Academic Expectations* and the developmental characteristics of pre-adolescent children.

The fourth-grade program continues to address the intellectual, social, emotional, aesthetic and physical needs of fourth-grade students, thereby supporting their successful transition from the primary program. The fifth-grade program provides a continuation and extension of learning from the primary and fourth-grade programs and prepares student for transition to the middle level program.

Content included in this document for the intermediate level is arranged sequentially by grade. However, it is the prerogative of school councils to reorganize the content into a format that best meets the needs of the school's students. This allows schools the opportunity to create integrated, interdisciplinary or multidisciplinary programs.

Kentucky Core Academic Standards –

INTERMEDIATE ARTS AND HUMANITIES

Kentucky Core Academic Standards – Arts and Humanities – Fourth Grade

The arts and humanities program in the fourth grade continues to center on an exploration of the art forms of dance, drama/theatre, music and visual arts. Emphasis should be placed on exposing students to a variety of arts through active experiences in all four art forms. This exploration includes a beginning of literacy development in the arts content areas, basic level analysis and critique of the arts, and active creating and performing in the arts.

Students should have the opportunity to learn about the arts in the context of creating and performing. As students create and perform, they learn that the arts are basic to human communication and that they can use the arts to communicate specific meaning through their choices in the use of various arts elements and principles of design.

The arts and humanities content standards at the fourth grade level are directly aligned with Kentucky's broad standards called the **Academic Expectations**. The **Academic Expectations** are directly related to the *National Standards for Arts Education (1994)*.

Arts and humanities grade level content standards are organized around five “Big Ideas” that are important to the arts disciplines. The five big ideas in arts and humanities are: Structures in

the Arts, Humanity in the Arts, Purposes for Creating the Arts, Processes in the Arts and Interrelationships Among the Arts. The Big Ideas are conceptual organizers for arts and humanities and are similar at each grade level to ensure students have multiple opportunities throughout their school careers to develop skills and concepts linked to each Big Idea.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of the arts and humanities. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for arts and humanities are fundamental to arts literacy and proficiency, and build on prior learning.

The three arts processes of creating, performing and responding to the arts provide a basis for deep understanding and appreciation of the arts. In the processes of creating and performing, a variety of technologies are employed, ranging from primitive technologies to cutting edge electronic and digital technologies.

Creating involves planning and creating new music, dance, drama/theatre or visual arts, or it may involve improvising in music, dance or drama/theatre. Improvising is the composing of new music, reciting/acting new dramatic material, or creating new dance movements on the spur of the moment.

Performing is limited to the performing arts of music, dance and drama/theatre. Performing involves presenting previously created works for an audience. Although the process of performing involves following a creative plan conceived by a composer, playwright or choreographer, there is still opportunity for creative interpretations in the performance.

Responding to the arts involves responses on multiple levels. The arts are a tool for communication and are capable of delivering meaning through literal and emotional content. Responding to the emotional content of artworks involves actually feeling the emotion(s) set forth by the creator. Responding can also involve intellectual analysis of works of art in regard to their design, effectiveness and quality.

Academic Expectations 2.25 and 2.26 bring forward the study of the humanities in the arts. The arts reflect time, place and society and offer a mirror to the human experience. The powerful communication qualities of the arts also enable them to be a factor that can drive the human experience. Study of historical and cultural contexts in the arts is an essential and integral part of instruction across all the art forms and across all grade levels.

Fourth grade students should have the opportunity to experience the arts of various cultures around the world, but specific study should focus on influences in the early history of America and the United States, specifically Native American arts, West African arts, Appalachian arts; how the arts are part of these cultures and purposes they have served in those cultures. Students will also study European arts that influenced arts in the American Colonial period.

**Social studies content has a definitive focus on Kentucky history and culture during the fourth grade, so a heavier emphasis on the arts of Kentucky, as well as Appalachian arts and folk arts*

can be incorporated in the fourth grade arts and humanities curriculum.

INTERMEDIATE ARTS AND HUMANITIES

Kentucky Core Academic Standards – Arts and Humanities – Fourth Grade

The arts and humanities program in the fourth grade continues to center on an exploration of the art forms of dance, drama/theatre, music and visual arts. Emphasis should be placed on exposing students to a variety of arts through active experiences in all four art forms. This exploration includes a beginning of literacy development in the arts content areas, basic level analysis and critique of the arts, and active creating and performing in the arts.

Students should have the opportunity to learn about the arts in the context of creating and performing. As students create and perform, they learn that the arts are basic to human communication and that they can use the arts to communicate specific meaning through their choices in the use of various arts elements and principles of design.

The arts and humanities content standards at the fourth grade level are directly aligned with Kentucky's broad standards called the **Academic Expectations**. The **Academic Expectations** are directly related to the *National Standards for Arts Education (1994)*.

Arts and humanities grade level content standards are organized around five “Big Ideas” that are important to the arts disciplines. The five big ideas in arts and humanities are: Structures in the Arts, Humanity in the Arts, Purposes for Creating the Arts, Processes in the Arts and Interrelationships Among the Arts. The Big Ideas are conceptual organizers for arts and humanities and are similar at each grade level to ensure students have multiple opportunities throughout their school careers to develop skills and concepts linked to each Big Idea.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of the arts and humanities. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for arts and humanities are fundamental to arts literacy and proficiency, and build on prior learning.

The three arts processes of creating, performing and responding to the arts provide a basis for deep understanding and appreciation of the arts. In the processes of creating and performing, a variety of technologies are employed, ranging from primitive technologies to cutting edge electronic and digital technologies.

Creating involves planning and creating new music, dance, drama/theatre or visual arts, or it may involve improvising in music, dance or drama/theatre. Improvising is the composing of new music, reciting/acting new dramatic material, or creating new dance movements on the spur of the moment.

Performing is limited to the performing arts of music, dance and drama/theatre. Performing involves presenting previously created works for an audience. Although the process of performing involves following a creative plan conceived by a composer, playwright or choreographer, there is still opportunity for creative interpretations in the performance.

Responding to the arts involves responses on multiple levels. The arts are a tool for communication and are capable of delivering meaning through literal and emotional content. Responding to the emotional content of artworks involves actually feeling the emotion(s) set forth by the creator. Responding can also involve intellectual analysis of works of art in regard to their design, effectiveness and quality.

Academic Expectations 2.25 and 2.26 bring forward the study of the humanities in the arts. The arts reflect time, place and society and offer a mirror to the human experience. The powerful communication qualities of the arts also enable them to be a factor that can drive the human experience. Study of historical and cultural contexts in the arts is an essential and integral part of instruction across all the art forms and across all grade levels.

Fourth grade students should have the opportunity to experience the arts of various cultures around the world, but specific study should focus on influences in the early history of America and the United States, specifically Native American arts, West African arts, Appalachian arts; how the arts are part of these cultures and purposes they have served in those cultures. Students will also study European arts that influenced arts in the American Colonial period.

**Social studies content has a definitive focus on Kentucky history and culture during the fourth grade, so a heavier emphasis on the arts of Kentucky, as well as Appalachian arts and folk arts can be incorporated in the fourth grade arts and humanities curriculum.*

Big Idea: Structure in the Arts

Understanding of the various structural components of the arts is critical to the development of other larger concepts in the arts. Structures that artists use include elements and principles of each art form, tools, media and subject matter that impact artistic products, and specific styles and genre that provide a context for creating works. It is the artist's choice of these structural components in the creative process that results in a distinctively expressive work. Students make choices about how to use structural organizers to create meaningful works of their own. The more students understand, the greater their ability to produce, interpret, or critique artworks from other artists, cultures, and historical periods.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.23 Students analyze their own and others' artistic products and performances using accepted standards.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- the elements of music, dance and drama are intentionally applied in creating and performing.
- the elements and principles of design of visual art are intentionally applied in creating works of art.
- responding to or critiquing works of art involves an understanding of elements, principles, and structures appropriate to each area of the arts.
- existing and emerging technologies can inspire new applications of structural components.

Grade 4 Skills and Concepts – Music

Students will

- recognize and identify elements of music (rhythm, tempo, melody, harmony, form, timbre, dynamics) using musical terminology
- use the elements of music while performing, singing, playing instruments, moving, listening, reading music, writing music and creating music independently and with others
- listen to and explore how changing different elements results in different musical effects
- recognize, describe and compare various styles of music (spirituals, game songs, folk songs, work songs, lullabies, patriotic, bluegrass)

Grade 4 Skills and Concepts – Dance

Students will

- recognize and identify elements of dance (space, time, force) and basic dance forms using dance terminology
- use the elements of dance in creating, copying and performing patterns of movement independently and with others
- observe, describe and demonstrate locomotor (e.g. walk, run, skip, gallop) and nonlocomotor (e.g. bend, stretch, twist, swing) movements

Big Idea: Structure in the Arts – Continued

Grade 4 Skills and Concepts – Drama/Theatre
Students will

- recognize and identify elements of drama (literary, technical, performance) using drama/theatre terminology
- use the elements of drama in creating and performing dramatic works independently and with others
- observe, describe and apply creative dramatics (improvisation, mimicry, pantomime, role playing and story telling) in a variety of situations
- explore a variety of dramatic works (e.g., theater and dramatic media – film, television)

Grade 4 Skills and Concepts – Visual Arts
Students will

- recognize and describe elements of art (line, shape, form, texture, color) and principles of design (emphasis, pattern, balance, contrast) using visual art terminology
- use the elements of art and principles of design in creating artworks independently and with others
- explore, describe and compare elements of art (e.g., line, shape, form, texture, primary and secondary colors, color schemes) and principles of design (e.g., focal point, pattern, balance, contrast) in two and three dimensional artworks
- identify a variety of subject matter (e.g., landscape, portrait, still life)

Big Idea: Humanity in the Arts

The arts reflect the beliefs, feelings, and ideals of those who create them. Experiencing the arts allows one to experience time, place and/or personality. By experiencing the arts of various cultures, students can actually gain insight into the beliefs, feelings and ideas of those cultures. Students also have the opportunity to experience how the arts can influence society through analysis of arts in their own lives and the arts of other cultures and historical periods. Studying the historical and cultural stylistic periods in the arts offers students an opportunity to understand the world past and present, and to learn to appreciate their own cultural heritage. Looking at the interrelationships of multiple arts disciplines across cultures and historical periods is the focus of humanities in the arts.

Academic Expectations

2.24 Students have knowledge of major works of art, music, and literature and appreciate creativity and the contributions of the arts and humanities.

2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.

2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- the arts are powerful tools for understanding human experiences both past and present.
- the arts help us understand others' (often very different) ways of thinking, working and expressing ourselves.
- the arts play a major role in the creation and defining of cultures and building civilizations.

Grade 4 Skills and Concepts – Music

Students will

- associate music they listen to or perform with specific cultures (Native American, Appalachian, West African); describe in simple terms how the music reflects the cultures
- associate music they listen to or perform with the Colonial American period in history; describe in simple terms how the music reflects the Colonial American time period
- describe the music of specific cultures using music terminology

Grade 4 Skills and Concepts – Dance

Students will

- associate dances they observe or perform with specific cultures (Native American, Appalachian, West African); describe in simple terms how dances reflect the cultures
- associate dances they observe or perform with the Colonial American period in history; describe in simple terms how dances reflect the Colonial American time period
- describe the dance of specific cultures using dance terminology

Grade 4 Skills and Concepts – Drama/Theatre

Students will

- associate story telling, myths, legends, or folktales they experience or perform with specific cultures (Native American, Appalachian, West African); describe how literature and oral tradition reflect the cultures
- associate folktales, legends, or myths they experience or perform with the Colonial American period in history; describe how literature and oral tradition reflect the Colonial American time period
- describe story telling, myths, legends, or folktales of specific cultures using drama/theatre terminology

Big Idea: Humanity in the Arts – Continued

Grade 4 Skills and Concepts – Visual Arts
Students will

- associate artworks they experience or create with specific cultures (Native American, Appalachian, West African); describe in simple terms how the art of these cultures reflects the cultures
- associate artworks they experience or create with the Colonial American period in history; describe how the art of the American Colonies reflects the Colonial American time period (e.g., European influences in American visual art)
- describe artworks of specific cultures using visual art terminology

Big Idea: Purposes for Creating the Arts

The arts have played a major role throughout the history of humans. As the result of the power of the arts to communicate on a basic human level, they continue to serve a variety of purposes in society. The arts are used for artistic expression to portray specific emotions or feelings, to tell stories in a narrative manner, to imitate nature and to persuade others. The arts bring meaning to ceremonies, rituals, celebrations and commemorations. Additionally, they are used for recreation and to support recreational activities. Students experience the arts in a variety of roles through their own creations and performances and through those of others. Through their activities and observations, students learn to create arts and use them for a variety of purposes in society.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- the arts fulfill a variety of purposes in society (e.g., to present issues and ideas, to entertain, to teach or persuade, to design, plan and beautify).
- the arts have value and significance for daily life. They provide personal fulfillment, whether in career settings, avocational pursuits, or leisure.
- the arts provide forms of nonverbal communication that can strengthen the presentation of ideas and emotions.

Grade 4 Skills and Concepts – Music

Students will

- identify purposes for which music is created (e.g., ceremonial, recreational, artistic expression)
- listen to and perform music created to fulfill a variety of specific purposes

Grade 4 Skills and Concepts – Dance

Students will

- identify purposes for which dance is created (e.g., ceremonial, recreational, artistic expression)
- observe and perform dance created to fulfill a variety of specific purposes

Grade 4 Skills and Concepts – Drama/Theatre

Students will

- identify purposes for which dramatic works are created (e.g., sharing the human experience, passing on tradition and culture, recreational, artistic expression)
- observe and perform dramatic works created to fulfill a variety of specific purposes

Grade 4 Skills and Concepts – Visual Arts

Students will

- identify purposes for which artworks are created (e.g., ceremonial, artistic expression, narrative, functional)
- create new and experience artworks designed to fulfill a variety of specific purposes

Big Idea: Processes in the Arts

There are three distinctive processes involved in the arts. These processes are creating new works, performing works for expressive purposes, and responding to artworks. Each process is critical and relies on others for completion. Artists create works to express ideas, feelings, or beliefs. The visual arts capture a moment in time while the performing arts (music, dance, drama/theatre) are performed for a live audience. The audience responds to the artistic expressions emotionally and intellectually based on the meaning of the work. Each process enhances understanding, abilities, and appreciation of others. Students involved in these processes over time will gain a great appreciation for the arts, for artists past and present, and for the value of artistic expression.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- there are three distinct processes for involvement in the arts; creating new artworks, performing works previously created, and responding to artworks and performances.
- full understanding and appreciation of the arts requires some degree of involvement in all three processes.
- openness, respect for work, and an understanding of how artists apply elements and principles of design in creating and performing are personal attitudes and skills that enhance enjoyment of the observer.
- existing and emerging technologies can extend the reach of the art form to new audiences.

Grade 4 Skills and Concepts – Music

Students will

- be actively involved in creating and performing music alone and with others
- use knowledge of the elements of music and music terminology to describe and critique their own performances and the performances of others
- identify possible criteria for evaluating music (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of music being performed; discuss opinions with peers in a supportive and constructive way

Grade 4 Skills and Concepts – Dance

Students will

- be actively involved in creating and performing dance alone and with others
- perform traditional folk dances, square dances, and ethnic dances. (Native American, West African/African-American, Early American and folk)
- use knowledge of the elements of dance and dance terminology to describe and critique their own performances and the performances of others
- identify possible criteria for evaluating dance (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of dance being performed; discuss opinions with peers in a supportive and constructive way

Big Idea: Processes in the Arts – Continued

Grade 4 Skills and Concepts – Drama/Theatre
Students will

- be actively involved in creating and performing dramatic works
- use knowledge of the elements of drama and drama terminology to describe and critique their own performances and the performances of others
- identify possible criteria for evaluating dramatic works (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of dramatic works being performed; discuss opinions with peers in a supportive and constructive way

Grade 4 Skills and Concepts – Visual Arts
Students will

- be actively involved in creating artworks
- use knowledge of the elements and principles of art and art terminology to describe and critique their own work and the work of others
- identify possible criteria for evaluating visual (e.g., skill of artist, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of the artwork being viewed; discuss opinions with peers in a supportive and constructive way
- describe personal responses to artwork; explain why there might be different responses to specific works of art

Big Idea: Interrelationships Among the Arts

The arts share commonalities in structures, purposes, creative processes, and their ability to express ideals, feelings and emotions. Studying interrelationships among the arts enables students to get a broad view of the expressiveness of the art forms as a whole, and helps to develop a full appreciation of the arts as a mirror of human kind.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.
2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- the arts are basic forms of human communication.
- music, dance, drama and visual art created in common cultures and/or common historical periods tend to reflect common attitudes, ideas, beliefs and feelings.
- the arts provide forms of non-verbal communication that can strengthen the presentation of ideas and emotions.
- the modes of thinking and methods of the arts disciplines can be used to illuminate situations in other disciplines that require creative solutions.

Grade 4 Skills and Concepts – Arts

Students will

- recognize that common terms are used in various arts (e.g., tempo in dance and music)
- identify communication of common themes or ideas across different art forms
- identify and explain connections between and among different art forms from the same culture or from the same time period
- describe commonalities between the arts and other subjects taught in the school (e.g., observation skills in visual arts and science, historical and cultural perspectives in the arts and social studies, shape in visual art and mathematics, dance and a healthy lifestyle, fractions in music notation and mathematics, reading music and reading words, composing music and writing)
- communicate common meaning through creating and performing in the four art forms

Kentucky Core Academic Standards – Arts and Humanities – Fifth Grade

The arts and humanities program in the fifth grade continues to center on an exploration of the art forms of dance, drama/theatre, music and visual arts. Emphasis should be placed on exposing students to a variety of arts through active experiences in all four art forms. This exploration includes a beginning of literacy development in the arts content areas, basic level analysis and critique of the arts, and active creating and performing in the arts.

Students should have the opportunity to learn about the arts in the context of creating and performing. As students create and perform, they learn that the arts are basic to human communication and that they can use the arts to communicate specific meaning through their choices in the use of various arts elements and principles of design.

The arts and humanities content standards at the fifth grade level are directly aligned with Kentucky's broad standards called the **Academic Expectations**. The **Academic Expectations** are directly related to the *National Standards for Arts Education (1994)*.

Arts and humanities grade level content standards are organized around five “Big Ideas” that are important to the arts disciplines. The five big ideas in arts and humanities are: Structures in the Arts, Humanity in the Arts, Purposes for Creating the Arts, Processes in the Arts and Interrelationships Among the Arts. The Big Ideas are conceptual organizers for arts and humanities and are similar at each grade level to ensure students have multiple opportunities throughout their school careers to develop skills and concepts linked to each Big Idea.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of the arts and humanities. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for arts and humanities are fundamental to arts literacy and proficiency, and build on prior learning.

The three arts processes of creating, performing and responding to the arts provide a basis for deep understanding and appreciation of the arts. In the processes of creating and performing, a variety of technologies are employed, ranging from primitive technologies to cutting edge electronic and digital technologies.

Creating involves planning and creating new music, dance, drama/theatre or visual arts, or it may involve improvising in music, dance or drama/theatre. Improvising is the composing of new music, reciting/acting new dramatic material, or creating new dance movements on the spur of the moment.

Performing is limited to the performing arts of music, dance and drama/theatre. Performing involves presenting previously created works for an audience. Although the process of performing involves following a creative plan conceived by a composer, playwright or choreographer, there is still opportunity for creative interpretations in the performance.

Responding to the arts involves responses on multiple levels. The arts are a tool for communication and are capable of delivering meaning through literal and emotional content. Responding to the emotional content of artworks involves actually feeling the emotion(s) set forth by the creator. Responding can also involve intellectual analysis of works of art in regard to their design, effectiveness and quality.

Academic Expectations 2.25 and 2.26 bring forward the study of the humanities in the arts. The arts reflect time, place and society and offer a mirror to the human experience. The powerful communication qualities of the arts also enable them to be a factor that can drive the human experience. Study of historical and cultural contexts in the arts is an essential and integral part of instruction across all the art forms and across all grade levels.

Fifth grade students should have the opportunity to experience the arts of various cultures around the world, but specific study should focus on influences in the early history of America and the United States, specifically Native American arts, West African arts, Appalachian arts; how the arts are part of these cultures and purposes they have served in those cultures. Students will also study European arts that influenced arts in the American Colonial period.

**Social studies content has a definitive focus on the American Colonial Period in the fifth grade, so a heavier emphasis on the arts of this period can be incorporated in the fifth grade arts and humanities curriculum.*

Big Idea: Structure in the Arts

Understanding of the various structural components of the arts is critical to the development of other larger concepts in the arts. Structures that artists use include elements and principles of each art form, tools, media and subject matter that impact artistic products and specific styles and genre that provide a context for creating works. It is the artist's choice of these structural components in the creative process that results in a distinctively expressive work. Students make choices about how to use structural organizers to create meaningful works of their own. The more students understand, the greater their ability to produce, interpret, or critique artworks from other artists, cultures, and historical periods.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.23 Students analyze their own and others' artistic products and performances using accepted standards.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- the elements of music, dance and drama are intentionally applied in creating and performing.
- the elements and principles of design of visual art are intentionally applied in creating works of art.
- responding to or critiquing works of art involves an understanding of elements, principles and structures appropriate to each area of the arts.
- existing and emerging technologies can inspire new applications of structural components.

Grade 5 Skills and Concepts – Music

Students will

- recognize and identify elements of music (rhythm, tempo, melody, harmony, form, timbre, dynamics) using musical terminology
- use the elements of music while performing, singing, playing instruments, moving, listening, reading music, writing music and creating music independently and with others
- listen to and explore how changing different elements results in different musical effects
- recognize, describe and compare various styles of music (spirituals, game songs, folk songs, work songs, lullabies, patriotic, bluegrass)

Grade 5 Skills and Concepts – Dance

Students will

- analyze and explain the use of elements of dance (space, time, force) and basic dance forms using dance terminology
- use the elements of dance in creating, copying and performing patterns of movement independently and with others
- observe, describe and demonstrate locomotor (e.g. walk, run, skip, gallop) and nonlocomotor (e.g. bend, stretch, twist, swing) movements
- apply principles of movement (e.g., balance, initiation of movement, weight shift) when observing, creating and performing movement skills

Big Idea: Structure in the Arts – Continued

Grade 5 Skills and Concepts – Drama/Theatre
Students will

- describe and compare elements of drama (literary, technical, performance) using drama/theatre terminology
- use the elements of drama in creating and performing dramatic works independently and with others
- observe, describe and apply creative dramatics (improvisation, mimicry, pantomime, role playing and story telling) in a variety of situations
- describe and explain characters, relationships among characters and settings as related to a script, a scenario, or classroom dramatization
- explore a variety of dramatic works (e.g., theater and dramatic media – film, television, electronic media)

Grade 5 Skills and Concepts – Visual Arts
Students will

- recognize and describe elements of art (line, shape, form, texture, color) and principles of design (emphasis, pattern, balance, contrast) using visual art terminology
- use the elements of art and principles of design in creating artworks independently and with others
- explore, describe and compare elements of art (e.g., line, shape, form, texture, primary and secondary colors, color schemes/groups) and principles of design (e.g., focal point, pattern, balance, contrast) in a variety of 2 and 3 dimensional artworks
- apply organizational structures and describe what makes them effective or not effective in communicating ideas

Big Idea: Humanity in the Arts

The arts reflect the beliefs, feelings and ideals of those who create them. Experiencing the arts allows one to experience time, place and/or personality. By experiencing the arts of various cultures, students can actually gain insight into the beliefs, feelings and ideas of those cultures. Students also have the opportunity to experience how the arts can influence society through analysis of arts in their own lives and the arts of other cultures and historical periods. Studying the historical and cultural stylistic periods in the arts offers students an opportunity to understand the world past and present, and to learn to appreciate their own cultural heritage. Looking at the interrelationships of multiple arts disciplines across cultures and historical periods is the focus of humanities in the arts.

Academic Expectations

2.24 Students have knowledge of major works of art, music, and literature and appreciate creativity and the contributions of the arts and humanities.

2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.

2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- the arts are powerful tools for understanding human experiences both past and present.
- the arts help us understand others' (often very different) ways of thinking, working, and expressing ourselves.
- the arts play a major role in the creation and defining of cultures and building civilizations.

Grade 5 Skills and Concepts – Music

Students will

- associate music they listen to or perform with specific cultures (Native American, Appalachian, West African); describe how the music reflects the cultures
- associate music they listen to or perform with the Colonial American period in history; describe how the music reflects the Colonial American time period (e.g. work songs, patriotic songs, folk music; European influences)
- describe distinguishing characteristics of the music of specific cultures using music terminology (e.g., polyrhythms in African music not in Native American)

Grade 5 Skills and Concepts – Dance

Students will

- associate dances they observe or perform with specific cultures (Native American, Appalachian, West African); describe how dances reflect the cultures (e.g., hunting dances from Native American and West African cultures)
- associate dances they observe or perform with the Colonial American period in history; describe how dances reflect the Colonial American time period (e.g., social dances, square dancing)
- describe the dance of specific cultures using dance terminology

Big Idea: Humanity in the Arts – Continued

Grade 5 Skills and Concepts – Drama/Theatre
Students will

- associate folktales, legends or myths they experience or perform with specific cultures (Native American, Appalachian, West African); describe how the literature and oral traditions reflect the cultures
- associate folktales, legends, or myths they experience or perform with the Colonial American period in history; describe how the literature and oral traditions reflect the Colonial American time period
- describe folktales, legends, or myths of specific cultures using drama/theatre terminology
- use print and non-print sources to explore, describe and compare themes, characters, and situations in dramas from different cultures

Grade 5 Skills and Concepts – Visual Arts
Students will

- associate artworks they experience or create with specific cultures (Native American, Appalachian, West African); describe how the art of these cultures reflects the culture
- associate artworks they experience or create with the Colonial American period in history; describe how the art of the American Colonies reflects the Colonial American time period (e.g., European influences in American visual art)
- describe artworks of specific cultures using visual art terminology
- compare distinguishing characteristics of artworks from different cultures and time periods

Big Idea: Purposes for Creating the Arts

The arts have played a major role throughout the history of humans. As the result of the power of the arts to communicate on a basic human level, they continue to serve a variety of purposes in society. The arts are used for artistic expression to portray specific emotions or feelings, to tell stories in a narrative manner, to imitate nature and to persuade others. The arts bring meaning to ceremonies, rituals, celebrations and commemorations. Additionally, they are used for recreation and to support recreational activities. Students experience the arts in a variety of roles through their own creations and performances and through those of others. Through their activities and observations, students learn to create arts and use them for a variety of purposes in society.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- the arts fulfill a variety of purposes in society (e.g., to present issues and ideas, to entertain, to teach or persuade, to design, plan and beautify).
- the arts have value and significance for daily life. They provide personal fulfillment, whether in career settings, avocational pursuits or leisure.
- the arts provide forms of nonverbal communication that can strengthen the presentation of ideas and emotions.

Grade 5 Skills and Concepts – Music

Students will

- describe and compare multiple purposes for which music is created to fulfill (ceremonial, recreational, artistic expression)
- create new, listen to, choose and perform music to fulfill a variety of specific purposes

Grade 5 Skills and Concepts – Dance

Students will

- describe and compare multiple purposes for which dance is created (ceremonial, recreational, artistic expression)
- create new, observe, choose and perform dance to fulfill a variety of specific purposes

Grade 5 Skills and Concepts – Drama/Theatre

Students will

- describe and compare multiple purposes for which dramatic works are created (sharing the human experience, passing on tradition and culture, recreational, artistic expression)
- create or write new, observe, choose and perform dramatic works to fulfill a variety of specific purposes

Grade 5 Skills and Concepts – Visual Arts

Students will

- describe and compare multiple purposes for which artworks are created (ceremonial, artistic expression, narrative, functional)
- create new, choose and experience artworks created to fulfill a variety of specific purposes

Big Idea: Processes in the Arts

There are three distinctive processes involved in the arts. These processes are creating new works, performing works for expressive purposes, and responding to artworks. Each process is critical and relies on others for completion. Artists create works to express ideas, feelings or beliefs. The visual arts capture a moment in time while the performing arts (music, dance, drama/theatre) are performed for a live audience. The audience responds to the artistic expressions emotionally and intellectually based on the meaning of the work. Each process enhances understanding, abilities and appreciation of others. Students involved in these processes over time will gain a great appreciation for the arts, for artists past and present and for the value of artistic expression.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- there are three distinct processes for involvement in the arts; creating new artworks, performing works previously created and responding to artworks and performances.
- full understanding and appreciation of the arts requires some degree of involvement in all three processes.
- openness, respect for work, and an understanding of how artists apply elements and principles of design in creating and performing are personal attitudes and skills that enhance enjoyment of the observer.
- existing and emerging technologies can extend the reach of the art form to new audiences.

Grade 5 Skills and Concepts – Music

Students will

- be actively involved in creating, notating, improvising and performing simple melodies (melodic shape/contour, meter), alone and with others
- sing and play simple rhythmic or tonal patterns by reading music notation, alone, and in small and large ensembles
- use knowledge of the elements of music and music terminology to describe and critique their own performances and the performances of others
- identify possible criteria for evaluating music (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of music being performed; discuss opinions with peers in a supportive and constructive way

Big Idea: Processes in the Arts – Continued

Grade 5 Skills and Concepts – Dance
Students will

- be actively involved in creating and performing dance (incorporating the elements of dance: space, time and force) alone and with others
- perform traditional folk dances, square dances and ethnic dances (Native American, West African/African-American, Early American and folk)
- use knowledge of the elements of dance and dance terminology to describe and critique their own performances and the performances of others
- identify possible criteria for evaluating dance (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of dance being performed; discuss opinions with peers in a supportive and constructive way

Grade 5 Skills and Concepts – Drama/Theatre
Students will

- be actively involved in creating, improvising and performing dramatic works using elements of drama (Literary, Technical, Performance)
- use a variety of resources (e.g., research, peers, technology) to write, refine, and record dialogue and action
- use knowledge of the elements of drama and drama terminology to describe and critique their own performances and the performances of others
- identify possible criteria for evaluating dramatic works (e.g., skill of performers, originality, emotional impact, variety, interest, technical requirements: lighting, sound, scenery, costumes)
- demonstrate behavior appropriate for observing the particular context and style of dramatic works being performed; discuss opinions with peers in a supportive and constructive way

Grade 5 Skills and Concepts – Visual Arts
Students will

- be actively involved in selecting media, techniques, and processes for creating artworks applying the elements of art and principles of design
- use knowledge of the elements and principles of art and art terminology to describe and critique their own work and the work of others
- identify possible criteria for evaluating visual (e.g., skill of artist, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of the artwork being viewed; discuss opinions with peers in a supportive and constructive way
- describe personal responses to artwork; explain why there might be different responses to specific works of art (e.g., personal experience, interest, medium used, effectiveness of message)

Big Idea: Interrelationships Among the Arts

The arts share commonalities in structures, purposes, creative processes, and their ability to express ideals, feelings and emotions. Studying interrelationships among the arts enables students to get a broad view of the expressiveness of the art forms as a whole, and helps to develop a full appreciation of the arts as a mirror of human kind.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.
2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- the arts are basic forms of human communication.
- music, dance, drama and visual art created in common cultures and/or common historical periods tend to reflect common attitudes, ideas, beliefs and feelings.
- the arts provide forms of non-verbal communication that can strengthen the presentation of ideas and emotions.
- the modes of thinking and methods of the arts disciplines can be used to illuminate situations in other disciplines that require creative solutions.

Grade 5 Skills and Concepts – Arts

Students will

- define common terms used in various arts (e.g., tempo in dance and music)
- explain communication of common themes or ideas across different art forms
- identify and explain connections between and among different art forms from the same culture or from the same time period
- describe commonalities between the arts and other subjects taught in the school (e.g., observation skills in visual arts and science, historical and cultural perspectives in the arts and social studies, shape in visual art and mathematics, dance and a healthy lifestyle, fractions in music notation and mathematics, composing music and writing)
- communicate common meaning through creating and performing in the four art forms

INTERMEDIATE PRACTICAL LIVING
(HEALTH AND PHYSICAL EDUCATION)

Kentucky Core Academic Standards – Practical Living – Fourth Grade

The health program in the 4th grade should provide opportunities for students to build upon the knowledge, skills and practices learned in the primary health education program. Continued acquisition of health knowledge enables students to make a smooth transition to the middle grades and prepares them to assume more responsibility for their own health.

Health literacy in the 4th grade program further develops an understanding of the body functions as well as behaviors and decisions that foster life-long health. Students in 4th grade health education focus on responsibility for personal health throughout the life cycle as related to good nutritional health and safety practices, decision-making skills, disease prevention and benefits of exercise. Other topics included are community resources, prevention of violence and substance abuse.

Physical Education addresses both health-related and skill-related components that promote enhanced health behaviors and increase responsible decision-making. Physical Education uses physical activity as a means to help students acquire skills, fitness, knowledge and attitudes that contribute to their optimal development and well-being.

The 4th grade physical education program continues the development and refinement of motor skills and their application to various games, sports and other physical activities. Defining fitness skills and building positive attitudes toward lifetime physical fitness are some benefits derived from participation in the 4th grade physical education program. Students in intermediate level physical education develop and refine movement patterns, socially acceptable behavior and sportsmanship through participation in activities and games. They also learn the relationship between exercise, rest and nutrition to growth and development

The Health and Physical Education content standards at the 4th grade level are directly aligned with Kentucky's **Academic Expectations.** The Health and Physical Education standards are organized around five "Big Ideas" that are important to the discipline of health and physical education. These big ideas are: Personal Wellness, Nutrition, Safety, Psychomotor Skills and Lifetime Physical Wellness. The Big Ideas are conceptual organizers for health and physical education and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to health and physical education. The understandings represent the desired results- what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lessons plans.

Skills and concepts describe the ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for health and physical education are fundamental to health literacy and build on prior learning.

The health and physical education program provides a connection to Kentucky's Learning Goals 3 (self-sufficient individuals) and Learning Goal 4 (responsible group member), which are included in Kentucky statue, but they are not included in the state's academic assessment program. These connections provide a comprehensive link between essential content, skills and abilities important to learning. In addition Learning Goal 5 (Think and Solve Problems) and Learning Goal 6 (Connect and Integrate Knowledge) are addressed in health and physical education.

All physical education courses taught in the state of Kentucky must be in compliance with the Federal Special Education Law and Title IX and shall not include practice for or participation in interscholastic athletics.

Big Idea: Personal Wellness (Health Education)

Wellness is maximum well-being, or total health. Personal wellness is a combination of physical, mental, emotional, spiritual and social well-being. It involves making behavioral choices and decisions each day that promote an individual's physical well-being, the prevention of illnesses and diseases and the ability to remain, physically, mentally, spiritually, socially and emotionally healthy.

Academic Expectations

2.29 Students demonstrate skills that promote individual well-being and healthy family relationships.
2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.32 Students demonstrate strategies for becoming and remaining mentally and emotionally healthy.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
4.1 Students effectively use interpersonal skills.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- responsibility to oneself promotes health enhancing behaviors.
- physical, emotional and social changes are normal and each individual is unique in the growth and development process.
- interpersonal skills and strategies can influence social, mental and emotional well-being and affect an individual's relationships.
- culture, media and use of technology (e.g., television, computers, MP3 Players, electronic/arcade games) can influence personal health.
- behavioral choices affect physical, mental, emotional and social well-being and can have positive or negative consequences on one's health.
- positive health habits prevent the spreading of diseases and injuries to self and others.
- self-management and coping strategies can enhance mental and emotional health.

Grade 4 Skills and Concepts – Personal and Physical Health

Students will

- describe the relationship between personal health behaviors and individual well-being
- explain the characteristics of mental/emotional, social and physical health
- explain and exhibit responsibility to oneself and others
- describe how individual behaviors and choices of diet, exercise and rest affect the body

Grade 4 Skills and Concepts – Growth and Development

Students will

- explain why growth and development are unique to each individual
- develop an awareness of the interrelatedness of body functions and the impact lifestyle choices has on body systems
- describe physical, social and emotional changes that occur during preadolescence

Big Idea: Personal Wellness (Health Education) – Continued

Grade 4 Skills and Concepts – Social, Mental and Emotional Health
Students will

- demonstrate social interaction skills by:
  - using etiquette, politeness, sharing and other social interaction skills
  - working and playing collaboratively in large and small groups
  - using appropriate means to express needs, wants and feelings
  - distinguishing between verbal and nonverbal communication
  - describing characteristics needed to be a responsible friend and family member
  - identifying social interaction skills that enhance individual health
- describe how goal setting can lead to personal achievement
- identify and describe common social and emotional problems (aggression, anxiety, depression)
- demonstrate the ability to apply a decision-making process to solve health issues and health problems
- identify self-management and coping strategies (goal setting, refusal skills, decision making and time management) that enhance health

Grade 4 Skills and Concepts – Family Health
Students will

- describe how culture influences personal health behaviors
- describe ways technology and media influences thoughts, feelings and personal health
- explain how family traditions/values impact personal health practices
- explain how information from school and family influences health

Grade 4 Skills and Concepts – Communicable, Non-Communicable and Chronic Diseases Prevention
Students will

- describe symptoms and treatments of:
  - communicable diseases (cold, strep throat and chicken pox)
  - non-communicable diseases (asthma, heart disease, diabetes, skin cancer)
- demonstrate an understanding of how to maintain a healthy body by:
  - explaining how body systems work together (e.g., digestive, circulatory and respiratory systems)
  - listing body defenses that fight pathogens
  - describing ways pathogens from the environment enter the body
  - identifying and explaining behaviors that promote personal hygiene (e.g., the use of grooming products) or can affect self and others in the prevention and spread of disease (e.g., hand washing, care of teeth and eyes, covering coughs and sneezes, sun protection)
  - describing reasons for regular visits to health care providers

Grade 4 Skills and Concepts – Alcohol, Tobacco and Other Drugs
Students will

- demonstrate an understanding of the use and misuse of alcohol, tobacco and other drugs:
  - distinguish between the use and misuse of drugs, alcohol and tobacco and identify the effects each use might have on the body
  - describe their effects on physical, mental, emotional and social health (e.g., effects on family life)

Big Idea: Nutrition (Health Education)

Proper nutrition is critical to good health. To maintain a healthy weight, good dietary habits and physical activity are essential. Nutritious foods are necessary for growth, development and maintenance of healthy bodies.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
3.2 Students will demonstrate the ability to maintain a healthy lifestyle.
3.5 Students will demonstrate self-control and self-discipline.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use decision-making process to make informed decisions among options.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- proper nutrition is essential to growth and development.
- nutrients provide energy for daily living.
- resources are available to assist in making nutritional choices.

Grade 4 Skills and Concepts

Students will

- explain the role of the digestive system in nutrition
- describe the relationship between food choices in staying healthy
- explain how to use resources (e.g., Food Guide Pyramid (FGP), Dietary Guidelines for Americans) in making healthful food choices
- identify nutrients which are important to growth and development of healthy bodies
- identify and explain the nutritional information provided on food labels

Big Idea: Safety (Health Education)

Accidents are a major cause of injury and death to children and adolescents. Unintentional injuries involving a motor vehicle, falls, drowning, fires, firearms and poisons can occur at home, school and work. Safe behavior protects a person from danger and lessens the effects of harmful situations.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
3.2 Students will demonstrate the ability to maintain a healthy lifestyle.
4.3 Students individually demonstrate consistent, responsive and caring behavior.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.1 Students use skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use a decision-making process to make informed decisions among-options.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- safety practices and procedures help to prevent injuries and provide a safe environment.
- community resources are available to assist in hazardous situations.

Grade 4 Skills and Concepts

Students will

- practice safety rules/procedures for crossing streets/highway, riding in cars and on buses and using playground equipment
- identify and explain ways to prevent injuries at home and at school (e.g., seat belts, helmets, knee pads, falls, poisonings) in a variety of situations
- explain and demonstrate school and home safety procedures (e.g., tornado, fire, earthquake drills)
- identify the effects injuries have on the body (e.g., skeletal system, skin, eyes)
- identify proper procedures (e.g., calling 911, Heimlich maneuver, stop, drop & roll, apply pressure) for dealing with a variety of emergency situations (e.g., choking, bleeding, burns)
- demonstrate awareness of how to avoid danger (e.g., fires, strangers) (e.g., through role plays, discussions, drawing)
- identify the available health and safety agencies in a community and the services they provide (e.g., health department, fire department, police, ambulance services)

Big Idea: Psychomotor Skills (Physical Education)

Cognitive information can be used to understand and enhance the development of motor skills such as movement sequences and patterns. Individuals who understand their bodies and how to perform various movements will be safer and more productive in recreation and work activities. Development of psychomotor skills contributes to the development of social and cognitive skills.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.34 Students perform physical movements skills effectively in a variety of settings.
2.35 Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.
4.1 Students effectively use interpersonal skills.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- spatial awareness, motor skills and movement patterns are needed to perform a variety of physical activities.
- movement concepts, principles and strategies apply to the learning and performance of physical activities.

Grade 4 Skills and Concepts

Students will

- demonstrate a variety of locomotor and combination skills in a movement pattern
- use non-locomotor, locomotor and combination skills to demonstrate movements in creative sequences and in simple patterned dances, games and other activities
- demonstrate a variety of non-locomotor, locomotor and combination skills while participating in different games and sports
- develop manipulative skills of throwing, catching, kicking and striking while developing motor skills (e.g., sliding, running, jumping) for use in games and other activities that lead to more complex games and sports (e.g., basketball, volleyball, soccer, softball)
- demonstrate and explain how movement patterns are influenced by space, force and time
- willingly try new movement and skills

Big Idea: Lifetime Physical Wellness (Physical Education)

Lifetime wellness is health-focused. The health-related activities and content utilized are presented to help students become more responsible for their overall health status and to prepare each student to demonstrate knowledge and skills that promote physical activity throughout their lives. Physical education uses physical activity as a means to help students acquire skills, fitness, knowledge and attitudes that contribute to their optimal development and well-being. Physical, mental, emotional and social health is strengthened by regular involvement in physical activities.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.34 Students perform physical movements skills effectively in a variety of settings.
2.35 Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.
3.1 Students demonstrate positive growth in self-concept through appropriate tasks or projects.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
3.7 Students demonstrate the ability to learn on one's own.
4.2 Students use productive team membership skills.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- physical activity provides opportunities for social interaction, challenges and fun.
- participation in regular physical activity has physical, mental and social benefits.
- practice is a basic component for improving sport skills.
- rules impact the effective participation in physical activities.
- personal and social behavior that shows respect to self and others impacts enjoyment and safety in physical activity settings.
- regular participation in health-related, physical activity supports the goals of fitness and a healthier lifestyle throughout life.
- principles and techniques are used to improve physical fitness.

Big Idea: Lifetime Physical Wellness (Physical Education) – Continued

Grade 4 Skills and Concepts
Students will

- identify likes and dislikes connected with participating in sports and physical activities; explain how physical activity provides opportunities for enjoyment, challenge, self-expression and social interaction
- identify and engage in physical activities that promote physical fitness and health
- describe the potential positive and negative (e.g., injury) effects of regular participation in moderate to vigorous physical activities
- participate in daily physical activity during and after school
- relate the concept of practice to the importance of learning new skills; explain why repeated appropriate practice contributes to increased skill development
- when participating in a variety of physical activities and games:
  - explain basic rules needed to make games fair
  - identify the need for rules in social settings and choose appropriate behaviors
  - demonstrate cooperation with partners and small groups
- demonstrate and apply the concept of sportsmanship (e.g., complying with rules, responding appropriately) in games, sports and physical activities
- explain how rules of play and sportsmanship for spectators and participants during games or activities can make them safe and enjoyable
- identify and participate in activities to enhance the health related fitness components (e.g., aerobic capacity/cardio-respiratory endurance, muscular endurance, muscular strength and flexibility)
- identify the components of fitness (muscular strength, muscular endurance, flexibility, body composition, cardio-respiratory endurance); describe the meaning of F.I.T.T. Principle (Frequency, Intensity, Type, Time)

Kentucky Core Academic Standards – Practical Living – Fifth Grade

The health program in the 5th grade should provide opportunities for students to build upon the knowledge, skills and practices learned in the fourth grade health education program. Continued acquisition of health knowledge enables students to make a smooth transition to the middle grades and prepares them to assume more responsibility for their own health.

Health literacy in the 5th grade program further develops an understanding of the body functions as well as behaviors and decisions that foster life-long health. Students in 5th grade health education focus on responsibility for personal health throughout the life cycle as related to good nutritional health and safety practices, decision-making skills, disease prevention and benefits of exercise. Other topics included are community resources, prevention of violence and substance abuse.

Students in 5th grade apply movement principles and concepts to enhance their movement performance, personal fitness and game strategy and tactics. They develop proficiency in games and dance. Students demonstrate specialized skills alone, with a partner or in a small group. They access and use resources to improve personal fitness as they exhibit a physically active lifestyle. Students continue to develop responsible personal and social behaviors as they work with others in safe and respectful ways.

Students in the 5th grade program are actively engaged in physical activity with developmentally appropriate instruction for effective learning to take place. The major goal for physical education at this level is to inspire children to be active for life.

The Health and Physical Education content standards at the 5th grade level are directly aligned with Kentucky's **Academic Expectations**. The Health and Physical Education standards are organized around five "Big Ideas" that are important to the discipline of health and physical education. These big ideas are: Personal Wellness, Nutrition, Safety, Psychomotor Skills and Lifetime Physical Wellness. The Big Ideas are conceptual organizers for health and physical education and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to health and physical education. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lessons plans.

Skills and concepts describe the ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for health and physical education are fundamental to health literacy and build on prior learning.

The health and physical education program provides a connection to Kentucky's Learning Goals 3 (self-sufficient individuals) and Learning Goal 4 (responsible group member), which are included in Kentucky statue, but they are not included in the state's academic assessment program. These connections provide a comprehensive link between essential content, skills and abilities important to learning. In addition Learning Goal 5 (think and solve problems) and Learning Goal 6 (connect and integrate knowledge) are addressed in health and physical education.

All physical education courses taught in the state of Kentucky must be in compliance with the Federal Special Education Law and Title IX and shall not include practice for or participation in interscholastic athletics.

Big Idea: Personal Wellness (Health Education)

Wellness is maximum well-being or total health. Personal wellness is a combination of physical, mental, emotional, spiritual and social well-being. It involves making behavioral choices and decisions each day that promote an individual's physical well-being, the prevention of illnesses and diseases and the ability to remain, physically, mentally, spiritually, socially and emotionally healthy.

Academic Expectations

2.29 Students demonstrate skills that promote individual well-being and healthy family relationships.
2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.32 Students demonstrate strategies for becoming and remaining mentally and emotionally healthy.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
4.1 Students effectively use interpersonal skills.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- maintaining a healthy lifestyle is an individual's responsibility.
- physical, emotional and social changes are normal in the growth and development process.
- social interaction skills can influence an individual's physical, mental and emotional health and affect relationships.
- physical, social, mental and emotional health are impacted by the environment, lifestyle, family history, peers and other factors.
- culture, media and use of technology (e.g., television, computers, MP3 Players, electronic/arcade games) can influence personal health.
- behavioral choices affect physical, mental, emotional and social well-being and can have positive or negative consequences on one's health.
- positive health habits prevent the spreading of diseases and injuries to self and others.
- self-management and coping strategies can enhance mental and emotional health.
- a variety of resources are available to inform, treat and counsel individuals with physical, mental, social and emotional health needs.

Grade 5 Skills and Concepts – Personal and Physical Health

Students will

- explain the importance of assuming responsibility for personal health behaviors
- determine health goals by identifying personal strengths and weakness
- describe how individual behaviors and choices of diet, exercise and rest affect the body

Grade 5 Skills and Concepts – Growth and Development

Students will

- explain the concept of maturity as it relates to physical, social and emotional development
- describe physical, social and emotional changes that occur during preadolescence

Big Idea: Personal Wellness (Health Education) – Continued

Grade 5 Skills and Concepts – Social, Mental and Emotional Health
Students will

- demonstrate social interaction skills by:
  - using appropriate means to express needs, wants and feelings
  - using effective social interaction skills (e.g., listening, cooperation, making friends, empathy)
  - recommending ways to avoid or reduce stressful situations/harmful behaviors in relationships (e.g. bullying, peer pressure, conflict)
- demonstrate the ability to apply a decision-making process to solve health issues and health problems
- identify common social and emotional problems (aggression, anxiety, depression)
- identify self-management and coping strategies (goal setting, refusal skills, decision making and time management) that enhance health

Grade 5 Skills and Concepts – Family and Community Health
Students will

- analyze how personal health, health behaviors and use of health services can be influenced by:
  - family traditions/values
  - technology and media messages
  - cultural beliefs
  - physical and social environments
  - information from peers

Grade 5 Skills and Concepts – Communicable, Non-Communicable and Chronic Disease Prevention
Students will

- demonstrate an understanding of diseases by:
  - describing symptoms and treatments of communicable diseases (cold, strep throat, chicken pox)
  - describing symptoms and treatments of non-communicable diseases (asthma, heart disease, diabetes, skin cancer)
- investigate family history, environment, lifestyle and other risk factors related to the cause or prevention of disease and other health problems
- demonstrate an understanding of how to maintain a healthy body by:
  - explaining how body systems work together (e.g., digestive, circulatory and respiratory systems)
  - describing ways pathogens from the environment enter the body and body defenses that fight pathogens
  - identifying and explaining behaviors that promote personal hygiene (e.g., the use of grooming products) or can affect self and others in the prevention and spread of disease (e.g., hand washing, care of teeth and eyes, covering coughs and sneezes, sun protection)
  - describing reasons for regular visits to health care providers

Grade 5 Skills and Concepts – Alcohol, Tobacco and Other Drugs
Students will

- demonstrate an understanding of the use and misuse of alcohol, tobacco and other drugs by:
  - distinguishing between the use and misuse of drugs, alcohol and tobacco and identify the effects each use might have on the body
  - describing their effects on physical, mental, emotional and social health (e.g., effects on family life)
  - identifying illegal drugs (inhalants, marijuana, stimulants, depressants) and describing how their usage affects the body systems
  - identifying resources available to individuals seeking treatment or counseling for negative behaviors or addictions

Big Idea: Nutrition (Health Education)

Proper nutrition is critical to good health. To maintain a healthy weight, good dietary habits and physical activity are essential. Nutritious foods are necessary for growth, development and maintenance of healthy bodies.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
3.2 Students will demonstrate the ability to maintain a healthy lifestyle.
3.5 Students will demonstrate self-control and self-discipline.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use decision-making process to make informed decisions among options.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- proper nutrition is essential to growth and development.
- nutrients provide energy for daily living.
- resources are available to assist in making nutritional choices.

Grade 5 Skills and Concepts

Students will

- provide examples of foods that are sources of the six nutrients (protein, carbohydrates, fats, minerals, vitamins, water)
- identify the role of nutrients and food sources which are important in the growth and development of healthy bodies
- interpret and explain the recommendations of national resources (e.g., Food Guide Pyramid (FGP), Dietary Guidelines for Americans) in making healthful food choices
- explain the role of the digestive system in nutrition
- explain how the nutritional information provided on food labels impacts dietary choices

Big Idea: Safety (Health Education)

Accidents are a major cause of injury and death to children and adolescents. Unintentional injuries involving a motor vehicle, falls, drowning, fires, firearms and poisons can occur at home, school and work. Safe behavior protects a person from danger and lessens the effects of harmful situations.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community
3.2 Students will demonstrate the ability to maintain a healthy lifestyle
4.3 Students individually demonstrate consistent, responsive and caring behavior
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others
5.1 Students use skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations
5.4 Students use a decision-making process to make informed decisions among-options

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- safety practices and procedures help to prevent injuries and provide a safe environment.
- community and state resources are available to assist in hazardous situations.
- proper procedures must be used in emergency situations.

Grade 5 Skills and Concepts

Students will

- explain and practice safety rules/procedures for crossing streets/highway, riding in cars and on buses and using playground equipment
- identify and explain ways to prevent injuries at home and at school (e.g., seat belts, helmets, knee pads, falls, poisonings) for a variety of situations
- demonstrate school and home safety procedures (e.g., tornado, fire, earthquake drills)
- explain and demonstrate the effects injuries have on the body (e.g., skeletal system, skin, eyes)
- describe proper procedures (e.g., calling 911, Heimlich maneuver, stop, drop & roll, apply pressure) for dealing with a variety of emergency situations (e.g., choking, bleeding, burns and broken bones)
- explain safety practices (e.g., use of seatbelts/helmets/life vests) for dealing with a variety of health hazards (e.g., crossing the street, talking to strangers, dealing with threatening situations) while at home, school and play
- describe how to avoid dangerous situations involving strangers, fires and internet safety
- identify the available community and state health and safety agencies and the services they provide (e.g., health department, fire department, state police, hospital transport services)
- access and use reliable resources on safety guidelines for avoiding injuries and dangerous situations

Big Idea: Psychomotor Skills (Physical Education)

Cognitive information can be used to understand and enhance the development of motor skills such as movement sequences and patterns. Individuals who understand their bodies and how to perform various movements will be safer and more productive in recreation and work activities. Development of psychomotor skills contributes to the development of social and cognitive skills.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.34 Students perform physical movements skills effectively in a variety of settings.
2.35 Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.
4.1 Students effectively use interpersonal skills.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- spatial awareness, motor skills and movement patterns are needed to perform a variety of physical activities.
- movement concepts, principles and strategies apply to the learning and performance of physical activities.

Grade 5 Skills and Concepts

Students will

- demonstrate a variety of locomotor and combination skills in a movement pattern
- use non-locomotor, locomotor and combination skills to demonstrate movements in creative sequences and in simple patterned dances, games and other activities
- demonstrate a variety of non-locomotor, locomotor and combination skills while participating in different games and sports
- develop manipulative skills of throwing, catching, kicking and striking while developing motor skills (e.g., sliding, running, jumping) for use in games and other activities that lead to more complex games and sports (e.g., football, volleyball, soccer, softball)
- demonstrate and explain how movement patterns are influenced by space, force and time

Big Idea: Lifetime Physical Wellness (Physical Education)

Lifetime wellness is health-focused. The health-related activities and content utilized are presented to help students become more responsible for their overall health status and to prepare each student to demonstrate knowledge and skills that promote physical activity throughout their lives. Physical education uses physical activity as a means to help students acquire skills, fitness, knowledge and attitudes that contribute to their optimal development and well-being. Physical, mental, emotional and social health is strengthened by regular involvement in physical activities.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.34 Students perform physical movements skills effectively in a variety of settings.
2.35 Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.
3.1 Students demonstrate positive growth in self-concept through appropriate tasks or projects.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
3.7 Students demonstrate the ability to learn on one's own.
4.2 Students use productive team membership skills.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- physical activity provides opportunities for social interaction, challenges, and fun.
- participation in regular physical activity has physical, mental and social benefits.
- practice is a basic component for improving sport skills.
- rules impact the effective participation in physical activities.
- personal and social behavior that shows respect to self and others impacts enjoyment and safety in physical activity settings.
- regular participation in health-related, physical activity supports the goals of fitness and a healthier lifestyle throughout life.
- fitness principles and techniques are used to improve/maintain physical health.

Big Idea: Lifetime Physical Wellness (Physical Education) – Continued

Grade 5 Skills and Concepts

Students will

- explain how physical activity provides opportunities for enjoyment, challenge, self-expression and social interaction
- explore a variety of physical activities in order to determine like and dislikes of games, sports and other activities
- identify and explain health benefits that result from regular participation in physical activity
- describe how physical activity is related to emotion/mental health
- participate in daily physical activity during and after school
- investigate the role of practice for successful participation in physical activity; explain why repeated appropriate practice contributes to increased skill development
- investigate personal skill proficiency through a variety of tasks and explain why some skills are more developed than others
- when participating in a variety of physical activities and games:
  - explain the need for rules in social settings
  - recognize and use appropriate safety principles, rules, procedures and etiquette
- demonstrate appropriate behaviors of sportsmanship, cooperation, teamwork and conflict resolution in physical activity settings
- explain how rules of play and sportsmanship for spectators and participants during games and/or activities make them safe and enjoyable
- describe and demonstrate the health related fitness components (muscular strength, muscular endurance, flexibility, body composition, cardio respiratory endurance)
- explain the meaning of F.I.T.T. Principle (Frequency, Intensity, Type, Time) as it relates to fitness
- identify lifetime physical activities (e.g., biking, swimming) that meet requirements for improving fitness

INTERMEDIATE SCIENCE

Kentucky Core Academic Standards – Science – Fourth Grade

The science program in the fourth grade should provide opportunities for students to think and work like scientists. Students must be provided multiple opportunities to observe and experience the world around them in order to develop scientific conception and abilities necessary to do scientific inquiry. These abilities include: (1) asking a question about objects, organisms and events in the environment, (2) planning and conducting a simple investigation/fair test, (3) using simple equipment and tools to gather data and extend the senses, (4) using data to construct a reasonable explanation and (5) communicating investigations and explanations.

Students should have opportunities to work individually and in groups of varying size and composition in order to conduct investigations, process information and discuss/debate important scientific concepts. Students must have regular opportunities to share their ideas with others and to test questions they generate as a result of their learning experiences.

In our technologically advanced society, information gathering must extend beyond the classroom walls and must involve a variety of credible sources. Scientists also place a high value on accurate record keeping and open communication of findings. The science classroom should mirror this by emphasizing multiple, varied and consistent methods of documenting and communicating learning.

The scientific content standards at the fourth grade level are directly aligned with Kentucky's **Academic Expectations**. Science standards are organized around seven “Big Ideas” that are important to the discipline of science. These big ideas are: Structure and Transformation of Matter, Motion and Forces, The Earth and the Universe, Unity and Diversity, Biological Change, Energy Transformations and Interdependence. The Big Ideas are conceptual organizers for science and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of science. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for science are fundamental to scientific literacy, scientific inquiry and build on prior learning.

Effectively implementing the Kentucky Core Academic Standards requires a common understanding of some of the terms referenced throughout this document. These terms include:

> **Investigate/Explore**- compile a variety of information through hands-on experiences (utilizing process skills such as measuring, observing, questioning, classifying, predicting and inferring) and/or consult a variety of print and non-print media in order to formulate conclusions and/or gather evidence/data.
>
> **Experiment/Test**- conduct a scientifically valid and controlled investigation, collecting and analyzing data. Use findings and conclusions to form logical explanations and openly share.

Research- consult a variety of credible sources of information to gain knowledge, answer questions and support conclusions and explanations.

Model- represent a phenomenon or concept. Models are often conceptual in nature, and the term ‘model’ does not always imply a physical product.

Big Idea: Structure and Transformation of Matter (Physical Science)

A basic understanding of matter is essential to the conceptual development of other big ideas in science. In the elementary years of conceptual development, students will be studying properties of matter and physical changes of matter at the macro level through direct observations, forming the foundation for subsequent learning. The use of models (and an understanding of their scales and limitations) is an effective means of learning about the structure of matter. Looking for patterns in properties is also critical to comparing and explaining differences in matter.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- things can be done to materials to change some of their properties, but not all materials respond the same way to what is done to them.
- when a new material is made by combining two or more materials the new material often has properties that are different from the original materials.
- properties of materials may change if the materials become hotter or colder.
- if water is turned into ice and then the ice is allowed to melt, the amount of water is the same as it was before freezing. When liquid water “disappears” it is not really gone, it has turned into a gas (vapor).
- scientists pay more attention to claims about how something works when the claims are backed up with evidence that can be confirmed.

Grade 4 Skills and Concepts

Students will

- identify matter as solids, liquids and gases
- gather information including temperature, magnetism, hardness and mass using appropriate tools to identify physical properties of matter
- investigate and describe how the physical properties of water change as heat energy is added or removed
- conduct tests, compare data and draw conclusions about physical properties of matter including states of matter, conduction and buoyancy
- predict and describe patterns of properties in matter, such as how materials will interact with each other and how they can be changed
- investigate student-generated questions about the properties of matter and uses of matter with particular properties
- design and build objects that require different properties of materials
- write clear descriptions of their designs and experiments, present their findings (when appropriate) in tables and graphs (designed by the students)
- analyze the designs and investigations of themselves and others to see if following the same procedures would produce similar results and conclusions (scientific validity)

Big Idea: Motion and Forces (Physical Science)

Whether observing airplanes, baseballs, planets, or people, the motion of all bodies is governed by the same basic rules. In the elementary years of conceptual development, students need multiple opportunities to experience, observe, and describe (in words and pictures) motion, including factors (pushing and pulling) that affect motion.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- an object's motion can be described as its change in position over time and can be represented in a variety of ways.
- forces (pushes and pulls) cause changes in the direction or speed of something moving; the greater the force on an object, the greater its change in motion.
- sound is produced by the vibration of matter, and the rate of vibration affects the pitch of the sound.
- things vary greatly in their motion. Some things move so fast they cannot be seen, while others are so slow that we cannot see that they are moving at all. Technology enables people to observe these fast or slow movements.
- recording and representing information about the motion of objects in a variety of ways makes that data useful in supporting explanations, even long after it was originally collected.

Grade 4 Skills and Concepts

Students will

- measure and record changes (using appropriate charts, graphs) in the position and motion of an object to which a force has been applied
- make inferences about the size of forces or the change in motion produced by various forces
- investigate how the rate of vibration of an object changes the pitch (high-low) of the sound it produces
- use tools and resources, such as stopwatches, sonic rangers, microscopes, computer simulations/animations and video clips, to observe motions that are hard to see or quantify and compare the usefulness/limitations of such tools
- answer student-generated questions through investigative and non-investigative processes about what affects motion and sound using information from a variety of print and non-print sources

Big Idea: The Earth and the Universe (Earth/Space Science)

The Earth system is in a constant state of change. These changes affect life on earth in many ways. Development of conceptual understandings about processes that shape the Earth begin at the elementary level with understanding what Earth materials are and that change occurs. At the heart of elementary students' initial understanding of the Earth's place in the universe is direct observation of the Earth-sun-moon system. Students can derive important conceptual understandings about the system as they describe interactions resulting in shadows, moon phases, and day and night. The use of models and observance of patterns to explain common phenomena is essential to building a conceptual foundation and supporting ideas with evidence at all levels.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- classifying Earth materials according to their properties allows decisions to be made about their usefulness for various purposes.
- weather data can be organized and represented in ways that reveal patterns needed for making predictions about the future, but the weather is so complex that it cannot always be predicted beyond being more or less likely to occur.
- the surface of the Earth is always changing through both fast and slow processes. These changes may be steady, repetitive or irregular. Careful analysis of data from past events allows the prediction of expected consequences when similar events happen again.
- a variety of models of the sun, earth, moon system are needed to explain the observed patterns of their relative motions, since people are not able to see from the outside how this system is constructed.
- a model of something can never be exactly like the real thing, but can be used to learn something about the real thing.

Grade 4 Skills and Concepts

Students will

- Use the properties of earth materials to make and support decisions about using them for different purposes (e.g., growing plants, building materials, fuel)
- analyze weather data to make predictions about future weather
- assess the accuracy of weather predictions and the evidence used to support the predictions made by each other and meteorologists
- describe and compare the processes, factors involved and consequences of slow changes to earth's surface (e.g., erosion and weathering)
- describe and compare contributing factors and consequences of fast changes to earth's surface (e.g., landslides, earthquakes, floods)
- explore, design and evaluate a number of models (e.g., physical, analogous, conceptual) of Earth-Sun and Earth-Sun-Moon systems for benefits, limitations and accuracy (e.g., scale, proportional relationships)
- analyze and interpret information from a variety of sources (e.g., print based, models, video) to construct reasonable explanations from direct and indirect evidence

Big Idea: Unity and Diversity (Biological Science)

All matter is comprised of the same basic elements, goes through the same kinds of energy transformations, and uses the same kinds of forces to move. Living organisms are no exception. Elementary students begin to observe the macroscopic features of organisms in order to make comparisons and classifications based upon likenesses and differences. Looking for patterns in the appearance and behavior of an organism leads to the notion that offspring are much like the parents, but not exactly alike. Emphasis at every level should be placed upon the understanding that while every living thing is composed of similar small constituents that combine in predictable ways, it is the subtle variations within these small building blocks that account for both the likenesses and differences in form and function that create the diversity of life.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- things in the environment are classified as living, nonliving and once living.
- characteristics of living things can be used to sort them into various groups: the characteristics chosen to establish the grouping depend on the reason for the grouping.
- organisms have different structures that are used for different functions. Observations of the structures of a certain organism can be used to predict how that organism functions or where it might live.
- offspring resemble their parents because the parents have a reliable way to transfer information to the next generation.
- some likenesses between parents and offspring are inherited (e.g. eye color) and some likenesses are learned (e.g. speech patterns in people).
- all living things are produced from other living things. They grow and then eventually die. Before they die most living things create offspring, allowing their kind to continue.

Grade 4 Skills and Concepts

Students will

- compare the concepts of living, once living and nonliving
- analyze the structures and related functions of a variety of plants and animals in order to establish classification schemes
- investigate and compare life cycles, especially reproductive characteristics (e.g., gestational periods, germination rates, number of offspring) and life expectancies of plants and animals to make inferences and/or draw conclusions about their populations
- identify, observe and compare some characteristics of organisms that are passed from the parents (e.g., color of flower petals) and others that are learned from interactions with the environment (e.g., learning to ride a bike)
- answer student-generated questions about the diversity of living things using information from a variety of print and non-print sources

Big Idea: Biological Change (Biological Science)

The only thing certain is that everything changes. Elementary students build a foundational knowledge of change by observing slow and fast changes caused by nature in their own environment, noting changes that humans and other organisms cause in their environment, and observing fossils found in or near their environment.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.6 Students understand how living and nonliving things change over time and the factors that influence the changes.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- the structures and characteristics of fossils provide information about the nature of an organism, the environmental conditions where/when it lived and how it is related to organisms still alive today.
- scientists ask many questions about the world around them, but not all of their questions can be investigated in a scientific way. Part of the job of a scientist is to focus only on questions that can be scientifically tested.
- scientists pay more attention to claims when they are supported with evidence that can be confirmed through scientific investigation.

Grade 4 Skills and Concepts

Students will

- examine fossils and representations of fossils to make comparisons among organisms that lived long ago and organisms of today and draw conclusions about the nature of the organisms and basic environments represented by fossils
- describe reasons why some differences in organisms give individuals an advantage in surviving and reproducing
- answer student-generated questions about how/why organisms and the environment have changed over time using information from a variety of print and non-print sources to support claims/provide evidence for conclusions
- analyze claims and information based on the credibility of the source and ability to confirm with multiple sources

Big Idea: Energy Transformations (Unifying Concepts)

Energy transformations are inherent in almost every system in the universe—from tangible examples at the elementary level, such as heat production in simple earth and physical systems to more abstract ideas beginning at middle school, such as those transformations involved in the growth, dying and decay of living systems. The use of models to illustrate the often invisible and abstract notions of energy transfer will aid in conceptualization, especially as students move from the macroscopic level of observation and evidence (primarily elementary school) to the microscopic interactions at the atomic level (middle and high school levels).

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- ecosystems are defined by the relationships that occur within them. These relationships can be determined through observation of the organisms and their environment.
- light and heat from the sun are essential to sustaining most life on earth. Plants change energy from the sun's light into energy that is used as food by the plant.
- electrical energy can be used for a variety of purposes. Many electrical systems share some common features, including a source of energy, a closed conducting path and a device that performs a function by utilizing that energy.
- light interacts with different kinds of matter in different ways and those interactions can be predicted based on the type of matter involved.
- heat is a form of energy that results when another form of energy is transformed. Heat flows through different materials at different rates, and it naturally flows from warmer areas to cooler ones.
- seeing how a model works after changes are made to it may suggest how the real thing would work if the same thing were done to it.

Big Idea: Energy Transformations (Unifying Concepts) – Continued

Grade 4 Skills and Concepts
Students will

- observe/construct, analyze patterns and explain basic relationships of plants and animals in an ecosystem (e.g., food webs)
- analyze food webs in order to draw conclusions about the relationship between the sun's heat and light and sustaining most life on Earth
- demonstrate open and closed circuits, and series and parallel circuits using batteries, bulbs and wires; analyze models of a variety of electrical circuits in order to predict changes to the systems
- identify events/situations that result in some energy being transformed into heat (e.g., rubbing hands together, lighting a bulb, running a car engine)
- identify and compare how heat is transferred through different materials in order to make predictions and draw conclusions about the heat conductivity of materials (e.g., compare the 'hotness' of wooden spoons, metal spoons, plastic spoons when exposed to higher temperatures)
- design and conduct investigations/experiments to compare properties of conducting and non-conducting materials (both heat and electrical), documenting and communicating (speak, draw, write, demonstrate) observations, designs, procedures and results of scientific investigations
- represent the path of light as it interacts with a variety of surfaces (reflecting, refracting, absorbing)
- make predictions/inferences about the behavior of light as it interacts with materials of differing properties
- answer student-generated questions about forms of energy (e.g., heat, light, sound, magnetic effects) using information from a variety of print and non-print sources

Big Idea: Interdependence (Unifying Concepts)

It is not difficult for students to grasp the general notion that species depend on one another and on the environment for survival. But their awareness must be supported by knowledge of the kinds of relationships that exist among organisms, the kinds of physical conditions that organisms must cope with, the kinds of environments created by the interaction of organisms with one another and their physical surroundings, and the complexity of such systems. Elementary learners need to become acquainted with ecosystems that are easily observable to them by beginning to study the habitats of many types of local organisms. Students begin to investigate the survival needs of different organisms and how the environment affects optimum conditions for survival.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- all living things depend on their environment and other organisms within it for their survival. Certain patterns of behavior or physical features may help an organism survive in some environments yet perish in others.
- environmental relationships extend beyond food (e.g. shelter, seed transport).
- people impact their environment in both beneficial and harmful ways. Some of these impacts can be predicted, while others cannot.
- beneficial and harmful are relative terms: any single action can be both beneficial and harmful to different organisms in an ecosystem.

Grade 4 Skills and Concepts

Students will

- observe, document and explain the cause and effect relationships existing between organisms and their environments
- use evidence and observations to make predictions/draw conclusions about how changes in the environment affect the plants' and animals' ability to survive
- observe, document and describe human interactions that impact the local environment
- describe and provide examples of how beneficial and harmful are relative terms
- evaluate the consequences of changes caused by humans or other organisms, and propose solutions to real life situations/dilemmas
- use evidence (obtained through investigative and/or non investigative research) to support or defend positions on real world environmental problems

Kentucky Core Academic Standards – Science – Fifth Grade

The science program in grade five incorporates opportunities for students to work and think like scientists as they apply abilities needed for scientific inquiry. These abilities include: (1) identifying questions that can be answered through scientific investigations, (2) designing and conducting scientific investigations, (3) using appropriate tools and techniques to gather, analyze and interpret data, (4) developing descriptions, explanations, predictions and models using evidence, (5) thinking critically and logically to uncover the relationships between evidence and explanations, (6) recognizing and analyzing alternative explanations and predictions, (7) communicating scientific procedures and explanations.

Students should have opportunities to work individually and in groups of varying size and composition in order to conduct investigations, process information and discuss/debate important scientific concepts. Students must have regular opportunities to share their ideas with others and to test questions they generate as a result of their learning experiences.

In our technologically advanced society, information gathering must extend beyond the classroom walls and must involve a variety of credible sources. Scientists also place a high value on accurate record keeping and open communication of findings. The science classroom should mirror this by emphasizing multiple, varied and consistent methods of documenting and communicating learning.

The scientific content standards at the fifth grade level are directly aligned with Kentucky's **Academic Expectations**. Science standards are organized around seven “Big Ideas” that are important to the discipline of science. These big ideas are: Structure and Transformation of Matter, Motion and Forces, The Earth and the Universe, Unity and Diversity, Biological Change, Energy Transformations and Interdependence. The Big Ideas are conceptual organizers for science and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of science. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for science are fundamental to scientific literacy, scientific inquiry and build on prior learning.

Effectively implementing the Kentucky Core Academic Standards requires a common understanding of some of the terms referenced throughout this document. These terms include:

> **Investigate/Explore-** compile a variety of information through hands-on experiences (utilizing process skills such as measuring, observing, questioning, classifying, predicting and inferring) and/or consult a variety of print and non-print media in order to formulate conclusions and/or gather evidence/data.

Experiment/Test- conduct a scientifically valid and controlled investigation, collecting and analyzing data. Use findings and conclusions to form logical explanations and openly share.

Research- consult a variety of credible sources of information to gain knowledge, answer questions and support conclusions and explanations.

Model- represent a phenomenon or concept. Models are often conceptual in nature, and the term ‘model’ does not always imply a physical product.

Big Idea: Structure and Transformation of Matter (Physical Science)

A basic understanding of matter is essential to the conceptual development of other big ideas in science. In the elementary years of conceptual development, students will be studying properties of matter and physical changes of matter at the macro level through direct observations, forming the foundation for subsequent learning. The use of models (and an understanding of their scales and limitations) is an effective means of learning about the structure of matter. Looking for patterns in properties is also critical to comparing and explaining differences in matter.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- a substance has its own set of properties which allows it to be distinguished from other substances.
- the physical properties of a substance do not change regardless of how much or how little of the substance there is.
- many kinds of changes in the properties of substances occur faster when the temperature is higher.
- when individual substances are combined, the total weight is equal to the sum of the individual weights.
- results of investigations are seldom exactly the same, but if the results vary widely, then it is necessary to figure out why they differ.

Grade 5 Skills and Concepts

Students will

- use appropriate tools (e.g., balance, thermometer, graduated cylinder) and observations to describe physical properties of substances (e.g., boiling point, solubility, density) and to classify materials
- work individually and with others to design and conduct fair tests to safely investigate properties of matter, such as boiling point, density and solubility
- keep accurate records of investigations (procedures, data) in order to support or dispute conclusions
- use student-generated questions about the properties of matter to drive inquiry-based learning experiences

Big Idea: Motion and Forces (Physical Science)

Whether observing airplanes, baseballs, planets, or people, the motion of all bodies is governed by the same basic rules. In the elementary years of conceptual development, students need multiple opportunities to experience, observe, and describe (in words and pictures) motion, including factors (pushing and pulling) that affect motion.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- predictions and/or inferences about the direction or speed of an object can be made by interpreting graphs, charts or descriptions of the object's motion.
- the more mass an object has, the less effect a given force will have.
- forces are pushes and pulls that may be invisible (e.g., gravity, magnetism) or visible (e.g., friction, collisions).
- some comparisons may not be 'fair' because some conditions (e.g. mass, force, speed, friction) might not be the same.

Grade 5 Skills and Concepts

Students will

- use observations and appropriate tools (e.g., timer, meter stick, balance, spring scale) to explore the relationship between force and mass
- create and interpret graphical representations in order to make inferences and draw conclusions about the motion of an object
- design and conduct experiments to examine the effects of variables on the straight line motion of objects. Analyze, review and critique each other's experiments
- predict and support with evidence/justification, changes in the motion of an object related to its mass or the amount of force acting on it

Big Idea: The Earth and the Universe (Earth/Space Science)

The Earth system is in a constant state of change. These changes affect life on earth in many ways. Development of conceptual understandings about processes that shape the Earth begin at the elementary level with understanding what Earth materials are and that change occurs. At the heart of elementary students' initial understanding of the Earth's place in the universe is direct observation of the Earth-sun-moon system. Students can derive important conceptual understandings about the system as they describe interactions resulting in shadows, moon phases, and day and night. The use of models and observance of patterns to explain common phenomena is essential to building a conceptual foundation and supporting ideas with evidence at all levels.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- the Earth's water supply has existed since the formation of the planet and is constantly cycled from the ocean to the atmosphere, allowing the same water to be endlessly reused without the creation of new water.
- water is a powerful solvent that dissolves earth materials, allowing them to impact the ocean system as water is cycled into it.
- earth is surrounded by a blanket of air called the atmosphere that is essential to life because of some of the gasses it contains.
- air is free to move from place to place all across the planet and this movement causes global weather patterns. Observing air movements help scientists explain both global and local weather patterns.
- observations, models and diagrams of the solar system illustrate the position and relationship of the Earth, sun and moon within the larger system of planets and other celestial bodies. Even though they are all parts of the same system, a comparison of their properties reveals great differences among celestial bodies.
- technology extends the ability of people to understand the universe. Most tools of today are different than those of the past, but may also be modifications of much older tools.

Big Idea: The Earth and the Universe (Earth/Space Science) – Continued

Grade 5 Skills and Concepts
Students will

- investigate how water can change forms yet still be conserved in the water cycle
- create/analyze/explain representations that illustrate the circulation of water (evaporation and condensation) from the surface of the Earth, through the crust, oceans and atmosphere (water cycle)
- compare weather and climate and describe the factors that influence each
- explore the concept of watersheds and identify factors that impact them, including results of interactions of water with earth materials (e.g., dissolving minerals, moving minerals and gases)
- describe the makeup of the Earth's atmosphere and analyze atmospheric data to explain real life phenomena (e.g., pressurized cabins in airplanes, mountain-climber's need for oxygen)
- use a variety of models and graphic representations to obtain and organize data in order to compare the major components of our solar system
- explore the development of and types of technology useful for learning about the atmosphere and our solar system
- explain why scale models are important tools for understanding a number of phenomena (e.g., solar system, watersheds, earth's atmosphere) but are not always easy to construct or require trade-offs in other aspects of the model (e.g. distance vs. size)

Big Idea: Unity and Diversity (Biological Science)

All matter is comprised of the same basic elements, goes through the same kinds of energy transformations, and uses the same kinds of forces to move. Living organisms are no exception. Elementary students begin to observe the macroscopic features of organisms in order to make comparisons and classifications based upon likenesses and differences. Looking for patterns in the appearance and behavior of an organism leads to the notion that offspring are much like the parents, but not exactly alike. Emphasis at every level should be placed upon the understanding that while every living thing is composed of similar small constituents that combine in predictable ways, it is the subtle variations within these small building blocks that account for both the likenesses and differences in form and function that create the diversity of life.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- animals and plants have a great variety of body plans and internal structures that contribute to their being able to meet their needs.
- organisms are composed of a variety of sub-systems that have essential functions. Organisms function with a minimum of superfluous parts because their structures are precisely suited to their essential functions.
- microscopes make it possible to see that living things are made mostly of cells. Some organisms cells vary greatly in appearance and perform very different roles in the organism.

Grade 5 Skills and Concepts

Students will

- use observations and models to describe and compare internal and external structures of plants and animals and their corresponding functions
- identify and describe systems and subsystems essential to an organism's survival
- use observations and models (conceptual, analogical, physical) to identify major structures of cells and their corresponding functions
- use scientific tools (e.g., microscopes) to observe and make comparisons of unicellular and multi-cellular organisms

Big Idea: Biological Change (Biological Science)

The only thing certain is that everything changes. Elementary students build a foundational knowledge of change by observing slow and fast changes caused by nature in their own environment, noting changes that humans and other organisms cause in their environment, and observing fossils found in or near their environment.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.

2.6 Students understand how living and nonliving things change over time and the factors that influence the changes.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- the gradual changes in organisms that have occurred over time are only accurately represented using a geologic time scale dating back to the formation of the Earth.
- sometimes differences in organisms give individuals an advantage in surviving and reproducing. Over many generations these adaptations have led to a wide variety of types of organisms.
- successful organisms must be able to maintain the basic functions of life in response to normal environmental fluctuations (e.g. day/night, seasonal temperature changes, precipitation). However, an organism that has an advantage in a specific environment may not be able to survive if the environment changes too drastically.
- scientific investigations may take many different forms, including observing what things are like or what is happening somewhere, collecting specimens for analysis and doing experiments. The question being investigated determines the form of the investigation used.

Grade 5 Skills and Concepts

Students will

- analyze various geologic time scale representations
- investigate and describe adaptations of various organisms to their environments through observations as well as print and non-print based resources
- Investigate ways that organisms cope with fluctuations (e.g. temperature, precipitation, change in food sources) in their environments
- propose explanations regarding adaptations of populations to environments citing evidence/data to support conclusions
- compare procedures used (e.g., experiments, investigative and non-investigative research, observations) to find information/collect data about the diversity of organisms that exist or have existed on Earth

Big Idea: Energy Transformations (Unifying Concepts)

Energy transformations are inherent in almost every system in the universe—from tangible examples at the elementary level, such as heat production in simple earth and physical systems to more abstract ideas beginning at middle school, such as those transformations involved in the growth, dying and decay of living systems. The use of models to illustrate the often invisible and abstract notions of energy transfer will aid in conceptualization, especially as students move from the macroscopic level of observation and evidence (primarily elementary school) to the microscopic interactions at the atomic level (middle and high school levels).

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- energy can have many different forms and be contained in many different substances. Evidence of energy transfer may be observed in a wide variety of systems.
- energy from the sun flows through space to reach the Earth. Solar energy provides the driving force for many of the changes that happen on the Earth's surface.
- electrical circuits transfer energy and can produce heat, light, sound and magnetic effects. They can be used for different purposes by rearranging their components.
- light interacts with matter in predictable ways that can be discovered through investigations.
- in a closed system, warm objects will cool and cool objects will warm until they are all the same temperature.
- if the results of an investigation are unexpected, it is good to make new observations. If those observations continue to be unexpected, different ideas should be considered to explain the results.

Grade 5 Skills and Concepts

Students will

- classify energy phenomena (e.g., heat/thermal energy, electrical energy, energy of position) as kinetic or potential and use observations and evidence to describe the transfer of energy occurring in simple systems
- describe solar energy and how it impacts physical and biological systems on Earth
- design and conduct investigations/experiments to determine the effects of altering variables within electrical circuits and to draw conclusions about the transfer of energy (e.g., heat, light, sound and magnetic effects) within a system
- design and conduct investigations/experiments to identify predictable patterns of interaction between light and matter (e.g. some materials are more reflective, different liquids refract differently, effects of multiple or differing light sources)

Big Idea: Interdependence (Unifying Concepts)

It is not difficult for students to grasp the general notion that species depend on one another and on the environment for survival. But their awareness must be supported by knowledge of the kinds of relationships that exist among organisms, the kinds of physical conditions that organisms must cope with, the kinds of environments created by the interaction of organisms with one another and their physical surroundings, and the complexity of such systems. Elementary learners need to become acquainted with ecosystems that are easily observable to them by beginning to study the habitats of many types of local organisms. Students begin to investigate the survival needs of different organisms and how the environment affects optimum conditions for survival.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- within every ecosystem are populations of organisms that serve specific functions. Changes to any population may affect the other populations in that ecosystem.
- all of the populations that interact with each other in an ecosystem form a specific community, but there may be multiple communities within the same ecosystem.
- matter and energy flow along multiple paths within a community. Complex models depicting this interdependence make these relationships easier to visualize and comprehend.

Grade 5 Skills and Concepts

Students will

- define the concepts of population and community and identify examples of populations and communities within various ecosystems
- identify the role/function a population of organisms has in a particular community/ecosystem (e.g., producers, consumers, decomposers)
- explore the cause/effect relationship of altering a particular population of organisms within an ecosystem using data/evidence collected through research and/or simulations (e.g., role-play games, computer-based simulations)
- analyze, create and describe visual representations of ecosystems and the interactions occurring within them. Compare and critique pre-existing and student-constructed representations for accuracy, identifying strengths and limitations, insisting on the use of evidence to support decisions

INTERMEDIATE SOCIAL STUDIES

Kentucky Core Academic Standards – Social Studies – Fourth Grade

Social studies in the intermediate grades has a different level/grade context each year. For example, grade four focuses on Kentucky studies and regions of the United States. Grade five includes an integrated focus on United States history. Regardless of the level/grade context, students incorporate each of the five areas of social studies in an integrated fashion to explore the content.

The primary purpose of social studies is to help students develop the ability to make informed decisions as citizens of a culturally diverse, democratic society in an interdependent world. The skills and concepts found throughout this document reflect this purpose by promoting the belief that students must develop more than an understanding of social studies content. They must also be able to apply the content perspectives of several academic fields of the social studies to personal and public experiences. By stressing the importance of both content knowledge and its application, the social studies curriculum in Kentucky provides a framework that prepares students to become productive citizens.

The social studies content standards at the intermediate level are directly aligned with Kentucky's **Academic Expectations**. Social Studies standards are organized around five "Big Ideas" that are important to the discipline of social studies. The five Big Ideas in social studies are: Government and Civics, Cultures and Societies, Economics, Geography and Historical Perspective. The Big Ideas, which are more thoroughly explained in the pages that follow, are conceptual organizers that are the same at each grade level. This consistency ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of social studies. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for social studies are fundamental to social studies literacy and build on prior learning.

The social studies program includes strong literacy connections, active hands-on work with concrete materials, and appropriate technologies. The social studies curriculum includes and depends on a number of different types of materials such as textbooks, non-fiction texts, biographies, autobiographies, journals, maps, newspapers, photographs and primary documents. Higher order thinking skills, such as compare, explain, analyze, predict, construct and interpret, are all heavily dependent on a variety of literacy skills and processes. For example, in social studies students must be able to understand specialized vocabulary, identify and comprehend key pieces of information within texts, determine what is fact and what is opinion, relate information across texts, connect new information to prior knowledge and synthesize the information to make meaning.

Big Idea: Government and Civics

The study of government and civics allows students to understand the nature of government and the unique characteristics of American representative democracy, including its fundamental principles, structure, and the role of citizens. Understanding the historical development of structures of power, authority and governance and their evolving functions in contemporary U.S. society and other parts of the world is essential for developing civic competence. An understanding of civic ideals and practices of citizenship is critical to full participation in society and is a central purpose of the social studies.

Academic Expectations

2.14 Students understand the democratic principles of justice, equality, responsibility, and freedom and apply them to real-life situations.

2.15 Students can accurately describe various forms of government and analyze issues that relate to the rights and responsibilities of citizens in a democracy.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- the government of Kentucky was formed to establish order, provide security and accomplish common goals.
- the Constitution of Kentucky establishes a government of limited powers that are shared among different levels and branches.
- all citizens of Kentucky have rights and responsibilities as members of a democratic society, including civic participation.
- fundamental values and principles of American representative democracy are expressed in Kentucky's Constitution.

Grade 4 Skills and Concepts

Students will

- demonstrate an understanding of the nature of government:
  - explore basic functions of state government (e.g., to establish order, to provide security and to accomplish common goals)
  - explain and give examples of services state governments provide (e.g., state police and fire protection, state parks, highway maintenance, snow removal)
  - describe how the state government provides services to its citizens (e.g., collecting taxes)
  - describe the structure of state government (e.g., the executive, legislative and judicial branches) and explain why power is shared among different branches
  - investigate and give examples of state laws and explain their purpose
- explore rights and responsibilities:
  - describe, give examples, and compare rights and responsibilities
  - describe the benefits of citizenship and find examples of citizenship in current events/news media
- use information from print and non-print sources (e.g., documents, informational passages/texts, interviews, digital and environmental) to explain basic democratic principles (e.g. life, liberty, pursuit of safety and happiness, acquiring and protecting property) found in Kentucky's Constitution

Big Idea: Cultures and Societies

Culture is the way of life shared by a group of people, including their ideas and traditions. Cultures reflect the values and beliefs of groups in different ways (e.g., art, music, literature, religion); however, there are universals connecting all cultures. Culture influences viewpoints, rules and institutions in a global society. Students should understand that people form cultural groups throughout the United States and the World and that issues and challenges unite and divide them.

Academic Expectations

2.16 Students observe, analyze, and interpret human behaviors, social groupings, and institutions to better understand people and the relationships among individuals and among groups.

2.17 Students interact effectively and work cooperatively with the many ethnic and cultural groups of our nation and world.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- culture is a system of beliefs, knowledge, institutions, customs/traditions, languages and skills shared by a group of people. Through a society's culture, individuals learn the relationships, structures, patterns and processes to be members of the society.
- cultures develop social institutions (e.g., government, economy, education, religion, family) to structure society, influence behavior and respond to human needs.
- interactions among individuals and groups assume various forms (e.g., compromise, cooperation, conflict, competition) and are influenced by culture.
- a variety of factors promote cultural diversity in the state of Kentucky.
- an appreciation of the diverse complexity of cultures is essential to interact effectively and work cooperatively with the many diverse ethnic and cultural groups of today.

Grade 4 Skills and Concepts

Students will

- develop an understanding of the nature of culture:
  - explore and compare cultural elements (e.g., beliefs, traditions, languages, skills, literature, the arts) of diverse groups (e.g., Native Americans and early settlers) in the early settlement of Kentucky
  - examine the influences/contributions of diverse groups in Kentucky
- investigate social institutions (e.g., family, government, economy, education, religion) in Kentucky and explain their functions
- describe conflicts that occurred between diverse groups (e.g., Native Americans and the early settlers) in the settlement of Kentucky
- investigate and compare culture/cultural events of diverse groups in Kentucky today with the past using information from print and non-print sources (e.g., documents, informational passages/texts, interviews, digital and environmental)

Big Idea: Economics

Economics includes the study of production, distribution and consumption of goods and services. Students need to understand how their economic decisions affect them, others and the nation as a whole. The purpose of economic education is to enable individuals to function effectively both in their own personal lives and as citizens and participants in an increasingly connected world economy. Students need to understand the benefits and costs of economic interaction and interdependence among people, societies, and governments.

Academic Expectations

2.18 Students understand economic principles and are able to make economic decisions that have consequences in daily living.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- the basic economic problem confronting individuals and groups in Kentucky today is scarcity; as a result of scarcity, economic choices and decisions must be made.
- a variety of fundamental economic concepts impact individuals and groups.
- economic institutions are created to help individuals, groups and businesses accomplish common goals.
- markets enable buyers and sellers to exchange goods and services.
- production and distribution of goods and services have changed over time in Kentucky.
- individuals, groups and businesses demonstrate interdependence as they make economic decisions about the use of resources (e.g., natural, human, capital) in the production, distribution, and consumption of goods and services.

Grade 4 Skills and Concepts

Students will

- develop an understanding of the nature of limited resources and scarcity:
  - use a variety of sources to research and give examples of productive resources (e.g., natural, human, capital) found in regions of Kentucky
  - explain why individuals, groups, and businesses must make economic decisions due to the scarcity of resources
  - investigate banks in Kentucky; explain and give examples of the roles banks play (e.g., loan money, save money) in helping people deal with scarcity
  - investigate and give examples of markets (past and present); and explain how goods and services were/are exchanged
- use a variety of sources to investigate and trace change over time (e.g., draw, chart, map, timeline) in the production, distribution, and consumption of goods and services (e.g., products made in Kentucky)
- investigate and give examples of specialization and explain how it promotes trade between places and regions of the United States (e.g., Kentucky imports and exports, Midwest exports corn, South exports citrus)

Big Idea: Geography

Geography includes the study of the five fundamental themes of location, place, regions, movement and human/environmental interaction. Students need geographic knowledge to analyze issues and problems to better understand how humans have interacted with their environment over time, how geography has impacted settlement and population and how geographic factors influence climate, culture, the economy and world events. A geographic perspective also enables students to better understand the past and present and to prepare for the future.

Academic Expectations

2.19 Students recognize and understand the relationship between people and geography and apply their knowledge in real-life situations.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- the use of geographic tools (e.g., maps, globes, charts, graphs) and mental maps help interpret information, understand and analyze patterns, spatial data and geographic issues.
- patterns emerge as humans move, settle and interact on Earth's surface and can be identified by examining the location of physical and human characteristics, how they are arranged and why they are in particular locations. Economic, political, cultural and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.
- regions help us to see Earth as an integrated system of places and features organized by such principles as landform types, political units, economic patterns and cultural groups.
- people depend on, adapt to, or modify the environment to meet basic needs. Human actions modified the physical environment and in turn, the physical environment limited and/or promoted human activities in the settlement of Kentucky.

Grade 4 Skills and Concepts

Students will

- demonstrate an understanding of patterns on the Earth's surface, using a variety of geographic tools (e.g., maps, globes, charts, graphs):
  - locate and describe major landforms, bodies of water and natural resources located in regions of Kentucky and the United States
  - locate, in absolute and relative terms, major landforms and bodies of water in regions of Kentucky and the United States
  - analyze and compare patterns of movement and settlement in Kentucky
  - explain and give examples of how physical factors (e.g., rivers, mountains) impacted human activities during the early settlement of Kentucky
- use information from print and non-print sources (e.g., documents, informational passages/texts, interviews, digital and environmental) to investigate regions of Kentucky:
  - compare regions in Kentucky by their human characteristics (e.g., settlement patterns, languages, and religious beliefs) and physical characteristics (e.g., climate, landforms, bodies of water)
  - describe patterns of human settlement in regions of Kentucky and explain relationships between these patterns and the physical characteristics (e.g., climate, landforms, bodies of water) of the region
  - explain the influence of the physical characteristics of regions (e.g., climates, landforms, bodies of water) on decisions that were made about where to locate things (e.g., factories stores, bridges)
  - analyze how advances in technology (e.g., dams, roads, irrigation) have allowed people to settle in places previously inaccessible (Kentucky)
- investigate interactions among human activities and the physical environment in regions of Kentucky:
  - explain how people modified the physical environment (e.g., dams, roads, bridges) to meet their needs
  - describe how the physical environment (e.g., mountains as barriers or protection, rivers as barriers or transportation) promoted and/or restricted human activities (e.g., exploration, migration, trade, settlement, development) and land use in Kentucky

Big Idea: Historical Perspective

History is an account of events, people, ideas, and their interaction over time that can be interpreted through multiple perspectives. In order for students to understand the present and plan for the future, they must understand the past. Studying history engages students in the lives, aspirations, struggles, accomplishments and failures of real people. Students need to think in an historical context in order to understand significant ideas, beliefs, themes, patterns, and events, and how individuals and societies have changed over time in Kentucky, the United States, and the World.

Academic Expectations

2.20 Students understand, analyze, and interpret historical events, conditions, trends, and issues to develop historical perspective.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- history is an account of human activities that is interpretive in nature and a variety of tools (e.g., primary and secondary sources) are needed to analyze and understand historical events.
- the history of Kentucky can be analyzed by examining the connected events shaped by multiple cause-effect relationships, tying past to present.
- the history of Kentucky has been impacted by significant individuals, groups and advances in technology.

Grade 4 Skills and Concepts

Students will

- demonstrate an understanding of the nature of history using a variety of tools (e.g., primary and secondary sources):
  - investigate and chronologically describe (e.g., timelines, charts) significant events in Kentucky history, from early development as a territory to development as a state
  - interpret and describe events in Kentucky's history in terms of their importance
  - examine cause and effect relationships that influenced Kentucky's history
  - explain reasons that different groups of people explored and settled in Kentucky
  - investigate the influences/contributions of diverse groups to the culture of Kentucky today
- use information from print and non-print sources (e.g., documents, informational passages/texts, interviews, digital and environmental):
  - examine and compare factual and fictional accounts of historical events in Kentucky's history
  - investigate change over time (e.g., transportation, communication, education, technology, lifestyles and conditions) in Kentucky's history
  - describe the significance of historical documents, symbols, and songs related to Kentucky's history (e.g., Kentucky's Constitution, state flag, state song)

Kentucky Core Academic Standards – Social Studies – Fifth Grade

Social studies in the intermediate grades has a different level/grade context each year. For example, grade four focuses on Kentucky studies and regions of the United States. Grade five includes an integrated focus on United States history. Regardless of the level/grade context, students incorporate each of the five areas of social studies in an integrated fashion to explore the content.

The primary purpose of social studies is to help students develop the ability to make informed decisions as citizens of a culturally diverse, democratic society in an interdependent world. The skills and concepts found throughout this document reflect this purpose by promoting the belief that students must develop more than an understanding of social studies content. They must also be able to apply the content perspectives of several academic fields of the social studies to personal and public experiences. By stressing the importance of both content knowledge and its application, the social studies curriculum in Kentucky provides a framework that prepares students to become productive citizens.

The social studies content standards at the intermediate level are directly aligned with Kentucky's Academic Expectations. Social Studies standards are organized around five “Big Ideas” that are important to the discipline of social studies. The five Big Ideas in social studies are: Government and Civics, Cultures and Societies, Economics, Geography and Historical Perspective. The Big Ideas, which are more thoroughly explained in the pages that follow, are conceptual organizers that are the same at each grade level. This consistency ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of social studies. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for social studies are fundamental to social studies literacy and build on prior learning.

The social studies program includes strong literacy connections, active hands-on work with concrete materials, and appropriate technologies. The social studies curriculum includes and depends on a number of different types of materials such as textbooks, non-fiction texts, biographies, autobiographies, journals, maps, newspapers, photographs and primary documents. Higher order thinking skills, such as compare, explain, analyze, predict, construct and interpret, are all heavily dependent on a variety of literacy skills and processes. For example, in social studies students must be able to understand specialized vocabulary, identify and comprehend key pieces of information within texts, determine what is fact and what is opinion, relate information across texts, connect new information to prior knowledge and synthesize the information to make meaning.

Big Idea: Government and Civics

The study of government and civics equips students to understand the nature of government and the unique characteristics of American representative democracy, including its fundamental principles, structure and the role of citizens. Understanding the historical development of structures of power, authority and governance and their evolving functions in contemporary U.S. society and other parts of the world is essential for developing civic competence. An understanding of civic ideals and practices of citizenship is critical to full participation in society and is a central purpose of the social studies.

Academic Expectations

2.14 Students understand the democratic principles of justice, equality, responsibility, and freedom and apply them to real-life situations.

2.15 Students can accurately describe various forms of government and analyze issues that relate to the rights and responsibilities of citizens in a democracy.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- the government of the United States was developed from a colonial base of representative democracy by people who envisioned an independent country and new purposes for the government.
- the United States Government was formed to establish order, provide security and accomplish common goals.
- the fundamental values and principles (e.g., liberty, justice, individual human dignity) of American representative democracy are expressed in historical documents (e.g., the Declaration of Independence, the Constitution of the United States, including the Preamble and the Bill of Rights).
- the Constitution of the United States establishes a government of limited powers that are shared among different levels and branches.
- as members of a democratic society, all citizens of the United States have certain rights and responsibilities, including civic participation.

Grade 5 Skills and Concepts

Students will

- demonstrate an understanding of government, using information from print and non-print sources (e.g., documents, informational passages/texts, interviews, digital and environmental):
  - investigate the basic functions of the United States Government, as defined in the Preamble to the U.S. Constitution, (e.g., establish justice, ensure domestic tranquility, provide for the common defense, promote the general welfare, secure the blessings of liberty) and explain their significance today
  - explain how democratic governments work to promote the “common good” (e.g., making, enacting, enforcing laws that protect rights and property of all citizens)
- describe the basic duties of the three branches of government (executive, legislative, judicial); explain why the framers of the U.S. Constitution felt it was important to establish a government with limited powers that are shared among different branches and different levels (e.g., local, state, federal)
- analyze information from print and non-print sources (e.g., documents, informational passages/texts, interviews, digital and environmental) to describe fundamental values and principles of American representative democracy (e.g., liberty, justice) found in the Declaration of Independence and the U.S. Constitution; explain their significance today
- investigate the rights and responsibilities of U.S. citizens:
  - describe and give examples of specific rights guaranteed to all U.S. citizens in the Bill of Rights (e.g., freedom of religion, freedom of speech, freedom of press) and explain why they are important today
  - describe some of the responsibilities U.S. citizens have in order for democratic governments to function effectively (e.g. voting, community service, paying taxes) and find examples of civic participation in current events/news (e.g., television, radio, articles, Internet)

Big Idea: Cultures and Societies

Culture is the way of life shared by a group of people, including their ideas and traditions. Cultures reflect the values and beliefs of groups in different ways (e.g., art, music, literature, religion); however, there are universals connecting all cultures. Culture influences viewpoints, rules, and institutions in a global society. Students should understand that people form cultural groups throughout the United States and the World, and that issues and challenges unite and divide them.

Academic Expectations

2.16 Students observe, analyze, and interpret human behaviors, social groupings, and institutions to better understand people and the relationships among individuals and among groups.

2.17 Students interact effectively and work cooperatively with the many ethnic and cultural groups of our nation and world.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- culture is a system of beliefs, knowledge, institutions, customs/traditions, languages and skills shared by a group of people. Through a society's culture, individuals learn the relationships, structures, patterns and processes to be members of the society.
- cultures develop social institutions (e.g., government, economy, education, religion, family) to structure society, influence behavior and respond to human needs.
- interactions among individuals and groups assume various forms (e.g., compromise, cooperation, conflict, competition) and are influenced by culture.
- a variety of factors promote cultural diversity in a society, nation and world.
- an understanding and appreciation of the diverse complexity of cultures is essential to interact effectively and work cooperatively with the many diverse ethnic and cultural groups of today.

Grade 5 Skills and Concepts

Students will

- demonstrate an understanding of culture and cultural elements (e.g., beliefs, traditions, languages, skills, literature, the arts) of diverse groups:
  - investigate cultural similarities and differences of diverse groups (e.g., English, French, Spanish and Dutch Colonists, West Africans, Immigrants of the 1800's) during the early development of the United States
  - research the contributions of diverse groups to the culture (e.g., beliefs, traditions, literature, the arts) of the United States today
  - investigate factors that promoted cultural diversity in the history of the United States
- examine social institutions (e.g., family, religion, education, government, economy) in the United States and explain their functions
- describe conflicts that occurred among and between diverse groups (e.g., Native Americans and the early Explorers, Native Americans and the Colonists, the British Government and the English Colonists, Native Americans and the U.S. Government) during the settlement of the United States; explain the causes of these conflicts and the outcomes
- describe causes of conflicts between individuals and/or groups today and give examples of how to resolve them peacefully

Big Idea: Economics

Economics includes the study of production, distribution, and consumption of goods and services. Students need to understand how their economic decisions affect them, others, and the nation as a whole. The purpose of economic education is to enable individuals to function effectively both in their own personal lives and as citizens and participants in an increasingly connected world economy. Students need to understand the benefits and costs of economic interaction and interdependence among people, societies, and governments.

Academic Expectations

2.18 Students understand economic principles and are able to make economic decisions that have consequences in daily living.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- the basic economic problem confronting individuals, groups and businesses in the United States today is scarcity: as a result of scarcity, economic choices and decisions must be made.
- a variety of fundamental economic concepts (e.g., supply and demand, opportunity cost) impact individuals, groups and businesses in the United States today.
- economic institutions are created to help individuals, groups and businesses accomplish common goals.
- markets enable buyers and sellers to exchange goods and services.
- production, distribution and consumption of goods and services have changed over time in the United States.
- individuals, groups and businesses in the United States demonstrate interdependence as they make economic decisions about the use of resources (e.g., natural, human, capital) in the production, distribution, and consumption of goods and services.

Grade 5 Skills and Concepts

Students will

- demonstrate an understanding using information from print and non-print sources (e.g., documents, informational passages/texts, interviews, digital and environmental) of the connection between resources, limited productive resources and scarcity:
  - investigate different kinds of resources (e.g., natural, human, capital)
  - explain how individuals and groups in the United States make economic decisions based upon limited productive resources (natural, human, capital) and give examples of how these decisions create interdependence between individuals, groups and businesses
- demonstrate an understanding of how people deal with scarcity; explain the roles banks play in helping people deal with scarcity (e.g., loan money, save money, lines of credit, interest-bearing accounts)
- demonstrate an understanding of markets:
  - explain how goods and services are/were exchanged
  - investigate and give examples of markets; explain how markets have changed over time during the history of the United States
- use a variety of sources:
  - investigate and trace (e.g., write, draw, chart, timeline) change over time in the production, distribution and consumption of goods and services in the United States
  - research specialization in the United States; explain how specialization promotes trade between individuals, groups and businesses in the United States and world; describe the impact of specialization on the production of goods in the United States

Big Idea: Geography

Geography includes the study of the five fundamental themes of location, place, regions, movement and human/environmental interaction. Students need geographic knowledge to analyze issues and problems to better understand how humans have interacted with their environment over time, how geography has impacted settlement and population, and how geographic factors influence climate, culture, the economy and world events. A geographic perspective also enables students to better understand the past and present and to prepare for the future.

Academic Expectations

2.19 Students recognize and understand the relationship between people and geography and apply their knowledge in real-life situations.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- the use of geographic tools (e.g., maps, globes, charts, graphs) and mental maps help interpret information, understand and analyze patterns, spatial data and geographic issues.
- patterns emerge as humans move, settle and interact on Earth's surface and can be identified by examining the location of physical and human characteristics, how they are arranged and why they are in particular locations. Economic, political, cultural and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.
- regions help us to see Earth as an integrated system of places and features organized by such principles as landform types, political units, economic patterns and cultural groups.
- people depend on, adapt to, and/or modify the environment to meet basic needs. Human actions modified the physical environment and in turn, the physical environment limited and/or promoted human activities in the settlement of the United States.

Grade 5 Skills and Concepts

Students will

- demonstrate an understanding of patterns on the Earth's surface, using a variety of geographic tools (e.g., maps, globes, charts, graphs):
  - locate, in absolute or relative terms, major landforms and bodies of water in the United States
  - locate and explain patterns on Earth's surface (e.g., how different factors such as rivers, mountains and plains impact where human activities are located)
- investigate regions on the Earth's surface and analyze information from print and non-print sources (e.g., documents, informational passages/texts, interviews, digital and environmental):
  - explain how places and regions in the U.S. are defined by their human characteristics (e.g., language, settlement patterns, religious beliefs) and physical characteristics (e.g., climate, landforms, bodies of water)
  - locate and describe patterns of human settlement and explain how these patterns were influenced by the physical characteristics (e.g., climate, landforms, bodies of water) of places and regions in the United States
  - investigate how advances in technology (e.g., dams, roads, air conditioning, irrigation) over time have allowed people to settle in places previously inaccessible in the United States
- investigate how humans modify the physical environment:
  - describe how people modified the physical environment (e.g., dams, roads, bridges) to meet their needs during the early settlement of the United States
  - analyze how the physical environment (e.g., mountains as barriers or protection, rivers as barriers or transportation) promoted and restricted human activities during the early settlement of the United States
  - explain how different perspectives of individuals and groups impact decisions about the use of land (e.g., farming, industrial, residential, recreational) in the United States

Big Idea: Historical Perspective

History is an account of events, people, ideas, and their interaction over time that can be interpreted through multiple perspectives. In order for students to understand the present and plan for the future, they must understand the past. Studying history engages students in the lives, aspirations, struggles, accomplishments, and failures of real people. Students need to think in an historical context in order to understand significant ideas, beliefs, themes, patterns and events, and how individuals and societies have changed over time in Kentucky, the United States, and the World.

Academic Expectations

2.20 Students understand, analyze, and interpret historical events, conditions, trends, and issues to develop historical perspective.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- history is an account of human activities that is interpretive in nature. A variety of tools (e.g., primary and secondary sources) are needed to understand and analyze historical events.
- the history of the United States can be analyzed by examining significant eras (*Colonization and Settlement, Revolution and a New Nation, Expansion and Conflict, Industrialization and Immigration and the Twentieth Century*) to develop a chronological understanding and recognize cause and effect relationships and multiple causation, tying past to present.
- the history of the United States has been impacted by significant individuals, groups and advances in technology.
- geography, culture, and economics have a significant impact on historical perspectives and events.

Grade 5 Skills and Concepts

Students will

- demonstrate an understanding of the interpretative nature of history using a variety of tools (e.g., primary and secondary sources):
  - investigate and chronologically describe major events in United States history (e.g., using timelines, charts, fictional and report writing, role playing)
  - explain and draw inferences about the importance of major events in United States history
  - examine cause and effect relationships in the history of the United States; identify examples of multiple causes of major historical events
  - explain reasons that individuals and groups explored and settled in the United States
  - research influences/contributions of diverse groups to the culture (e.g., beliefs, traditions, literature, the arts) of the United States today
- use information from print and non-print sources (e.g., documents, informational passages/texts, interviews, digital and environmental):
  - examine factual and fictional accounts of significant historical events and people in United States history
  - explore change over time (e.g., transportation, communication, education, technology, lifestyles and conditions) in the United States
  - compare reasons (e.g., freedoms, opportunities, fleeing negative situations) immigrants came/come to America
  - investigate the events surrounding patriotic symbols, songs, landmarks (e.g., American flag, Statue of Liberty, the Star-Spangled Banner), and selected readings (e.g., Dr. Martin Luther King's speech: I Have a Dream), and explain their historical significance
- investigate patterns across in U.S. history (e.g., major events/conflicts/culture; compare with major events/conflicts/culture to the present)

INTERMEDIATE TECHNOLOGY

Kentucky Core Academic Standards – Technology – Intermediate

Technology use in the 21st century has become a vital component of all aspects of life. For students in Kentucky to be contributing citizens, they must receive an education that incorporates technology literacy at all levels. Technology literacy is the ability of students to responsibly use appropriate technology to communicate, solve problems, and access, manage, integrate, evaluate, and create information to improve learning in all subject areas and to acquire lifelong knowledge and skills in the 21st century. The Technology Kentucky Core Academic Standards provides a framework for integrating technology into all content areas. It reflects the basic skills required for each student to be competitive in the global economy.

For students to gain the technology competencies, it is essential that they have access to technology during the school day in all grade levels. Instruction should provide opportunities for students to gain and demonstrate technology skills that build primary through grade 12.

The technology content standards should be integrated into each curricular discipline. The purpose of integrating technology is to help students make useful connections between what they learn in each content area and the real world. Technology knowledge, concepts and skills should be interwoven into lessons or units and taught in partnership with other content areas. Technology lends itself to curriculum integration and team teaching. Technology can enhance learning for all students, and for some it is essential for access to learning.

The technology content standards are organized by grade spans: primary, intermediate, middle, and high. The technology Kentucky Core Academic Standards at the intermediate level builds upon primary experiences. It continues to build competencies related to technology literacy. Students interpret critique and evaluate digital texts, synthesize information and solve problems. Students create and use technology for developing ideas and opinions, for communicating and collaborating with others and for personal fulfillment. These experiences enhance and extend students' technology skills.

The technology content standards at the intermediate grade span are directly aligned with Kentucky's **Academic Expectations**. Technology standards are organized around three Big Ideas that are important to the discipline of technology. The three Big Ideas in technology are: **1) Information, Communication and Productivity; 2) Safety and Ethical/Social Issues;** and **3) Research, Inquiry/Problem-Solving and Innovation**. The Big Ideas are conceptual organizers for technology. Each grade level span ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of *Enduring Knowledge/Understandings* that represent overarching generalizations linked to the Big Ideas of Technology. The understandings represent the desired results--what learning will focus upon and what knowledge students will be able to explain or apply. *Understandings* can be used to frame development of units of study and lesson plans.

Skills and Concepts describe ways that students demonstrate their learning and are specific to each grade level span. The skills and concepts for technology are fundamental to technology literacy, safe use and inquiry. The skills and concepts build on prior learning.

Big Idea: Information, Communication and Productivity

Students demonstrate a sound understanding of the nature and operations of technology systems. Students use technology to learn, to communicate, increase productivity and become competent users of technology. Students manage and create effective oral, written and multimedia communication in a variety of forms and contexts.

Academic Expectations

1.11 Students write using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.16 Students use computers and other kinds of technology to collect, organize, and communicate information and ideas.
3.3 Students demonstrate the ability to be adaptable and flexible through appropriate tasks or projects.
6.1 Students connect knowledge and experiences from different subject areas.
6.3 Students expand their understanding of existing knowledge by making connections with new knowledge, skills, and experiences.

Intermediate Enduring Knowledge – Understandings

Students will understand that

- appropriate terminology, computer operations and applications assist in gaining confidence in the use of technology.
- technology requires proper care and maintenance to be used effectively.
- a variety of media is used to support directed and independent learning.
- technology is used to communicate in a variety of ways including global communications.
- technology (e.g. keyboarding, word processing, spreadsheets, presentation) is used effectively and efficiently to accomplish a task.

Intermediate Skills and Concepts – Information

Students will

- investigate different technology devices (e.g., CPU, monitor, keyboard, disk drive, printer, mouse)
- describe the uses of technology (e.g., computers, telephones, cell phones, digital and video cameras, Internet) at home, school and workplace
- use appropriate technology terms (e.g., hardware, software, CD, hard drive)
- explain the use of networks and the need for login procedures (e.g., stand alone, network, file server, LANs network resources)
- demonstrate proper keyboarding techniques, optimal posture and correct hand placement (e.g., home row finger placement) at the computer workstation

Intermediate Skills and Concepts – Communication

Students will

- use technology to communicate in a variety of modes (e.g., audio, speech to text, print, media)
- participate in online group projects and learning activities using technology communications
- create a variety of tasks using technology devices and systems to support authentic learning
- use technology to collect data for content area assignments/projects
- use a variety of tools and formats (oral presentations, journals and multimedia presentations) to summarize and communicate the results of observations and investigations
- use online collaborative tools (e.g., email, videoconferencing)

Intermediate Skills and Concepts – Productivity

Students will

- develop, publish and present information in print and digital formats
- use productivity tools to produce content area assignments/projects

Big Idea: Safety and Ethical/Social Issues

Students understand safe, ethical and social issues related to technology. Students practice and engage in safe, responsible and ethical use of technology. Students develop positive attitudes toward technology use that supports lifelong learning, collaboration, personal pursuits and productivity.

Academic Expectations

2.17 Students interact effectively and work cooperatively with the many ethnic and cultural groups of our nation and world.
3.6 Students demonstrate the ability to make decisions based on ethical values.
4.3 Students individually demonstrate consistent, responsive, and caring behavior.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
4.5 Students demonstrate an understanding of, appreciation for, and sensitivity to a multi- cultural and world view.

Intermediate Enduring Knowledge – Understandings

Students will understand that

- responsible and ethical use of technology is necessary to ensure safety.
- technology is used in collaborative and interactive projects to enhance learning.
- acceptable technology etiquette is essential to respectful social interactions and good citizenship.
- technology is used in jobs and careers to support the needs of the local and global community.
- assistive technology supports learning to ensure equitable access to a productive life.

Intermediate Skills and Concepts – Safety

Students will

- explain the importance of safe Internet use (e.g., iSafe skills)
- apply safe behavior when using technology

Intermediate Skills and Concepts – Ethical Issues

Students will

- investigate basic issues related to responsible use of technology and describe personal consequences of inappropriate use (e.g., plagiarism, intellectual property, copyright and the conditions of Acceptable Usage Policy)
- explore, investigate and practice the use of technology in an appropriate, safe and responsible manner
- use ethical behavior while using technology in personal and community contexts

Intermediate Skills and Concepts – Social Issues

Students will

- use technology to collaborate and engage in interactive projects with others (e.g., local, national and global) and credit all participants for their contribution to the work
- use proper social etiquette with any technology (e.g., email, blogs, IM, telephone, help desk)
- investigate how assistive technologies supports learning
- explain how technology has had an influence on our world
- explain how technology supports career options and lifelong learning

Big Idea: Research, Inquiry/Problem-Solving and Innovation

Students understand the role of technology in research and experimentation. Students engage technology in developing solutions for solving problems in the real world. Students will use technology for original creation and innovation.

Academic Expectations

1.1 Students use reference tools such as dictionaries, almanacs, encyclopedias, and computer reference programs and research tools such as interviews and surveys to find the information they need to meet specific demands, explore interests, or solve specific problems.
2.3 Students identify and analyze systems and the ways their components work together or affect each other.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating, and comparing to solve a variety of problems in real-life situations.
5.2 Students use creative thinking skills to develop or invent novel, constructive ideas or products.
5.4 Students use a decision-making process to make informed decisions among options.
5.5 Students use problem-solving processes to develop solutions to relatively complex problems.
6.1 Students connect knowledge and experiences from different subject areas.

Intermediate Enduring Knowledge – Understandings

Students will understand that

- technology assists in gathering, organizing and evaluating information from a variety of sources to answer essential questions.
- technology supports critical thinking skills used in inquiry/problem solving to make informed decisions.
- technology is used to produce an innovative product or system.

Intermediate Skills and Concepts – Research

Students will

- gather and use accurate information from a variety of electronic sources (e.g. teacher-selected web sites, CDROM, encyclopedias and automated card catalog, online virtual library; word processing, database, spreadsheet) in all content areas
- correctly cite sources
- evaluate the accuracy, relevance, appropriateness, comprehensiveness and bias of electronic information sources
- use technology tools to process data and report results
- use content-specific tools to enhance understanding of content (e.g., environmental probes, sensors, robotics, simulation software and measuring devices)

Intermediate Skills and Concepts – Inquiry/Problem-solving

Students will

- determine which technology is useful and select the appropriate tool(s) (e.g., calculators, data collection probes, videos, educational software) to inquire/problem- solve in self-directed and extended learning
- use technology to solve problems using critical thinking and problem-solving strategies
- solve content-specific problems using a combinations of technologies

Intermediate Skills and Concepts – Innovation

Students will

- use technology to organize and develop creative solutions, ideas or products
- use technology to express creativity both individually and collaboratively

INTERMEDIATE VOCATIONAL STUDIES

Kentucky Core Academic Standards – Vocational Studies – Fourth Grade

The vocational studies program at the fourth grade develops an awareness of careers. This awareness includes the purpose of having a job, concepts of consumer decision-making, saving money, and connections between work and learning. The challenge is to empower students to make a connection between school and the world of work and to be productive citizens.

The fourth grade level provides appropriate opportunities for students to be involved in activities designed to develop an appreciation of work and an awareness of self and jobs/careers. They should examine the relationship between school studies and work; this will enable them to make vital connections that will give meaning to their learning. Elementary students should begin to develop work habits, study skills, team skills and set short-term goals.

The vocational studies program at the fourth grade includes active, hands-on work with concrete materials and appropriate technologies. Although the vocational studies program for fourth grade is divided into five areas, each area is designed to interact with the others in an integrated fashion. Because of this integration, students are able to develop broad conceptual understandings in vocational studies. All content teachers are responsible for providing instruction in the vocational studies area.

The vocational studies content standards at the fourth grade are directly aligned with Kentucky's **Academic Expectations.** The vocational studies standards are organized around five "Big Ideas" that are important to the discipline of Vocational Studies. These big ideas are: Consumer Decisions, Financial Literacy, Career Awareness/Exploration/Planning, Employability Skills, and Communication/Technology. The Big Ideas are conceptual organizers for vocational studies and are the same at each grade level. This ensures students have multiple opportunities throughout their school career to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of vocational studies. The understandings represent the desired results- that focus on learning, and the knowledge students will have to explain or apply. Understandings can be used to frame development of units of study and lessons plans.

Skills and concepts describe the ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for vocational studies are fundamental to career awareness and builds on prior learning.

Academic Expectations 2.36 and 2.37 bring forward the career awareness in Vocational Studies. Vocational Studies provide a connection to Kentucky Learning Goal 3 (become self-sufficient individual) and Learning Goal 4 (become a responsible group members). These connections provide a comprehensive link between essential content, skills and abilities important to learning.

Big Idea: Consumer Decisions

Individual and families need to make consumer decisions due to the numerous products/services on the market, multiple advertising techniques, and the need to make responsible financial management decisions. Accessing and assessing consumer information, comparing and evaluating products and services, provides basis for making effective consumer decisions. Consumer decisions influence the use of resources and the impact they have on the community and environment.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions. Students demonstrate the skills to evaluate and use services and resources available in their community.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- fundamental economic concepts are important for consumer decision-making.
- consumer decisions are influenced by economic and social factors.
- values have a role in making consumer decisions.
- consumer actions (e.g., reusing, reducing, recycling) influence the use of resources and impact the environment.
- an individual has multiple life roles that impact responsibility to be a valuable family and community member.

Grade 4 Skills and Concepts

Students will

- investigate economic concepts and why they are important for consumer decisions by:
  - examining how individuals and families make choices to satisfy needs and wants as they relate to consumer decisions
  - explain bartering, and how money makes it easier for people to get things they want
  - determining ways in which goods and services used by families impact the environment
- describe how culture, media and technology can influence consumer decisions by:
  - comparing and evaluating products and services based on major factors (e.g., price, quality, features) when making consumer decisions
  - describing how different types of media, technology and advertising impact the family and consumer decision-making
  - identify ways in which consumer decisions (e.g., buying and selling) affect families and friends
- identify ways that individuals have rights and responsibilities as a consumer
- evaluate consumer actions (e.g., reusing, reducing, recycling) and how they influence the use of resources and impact the environment by:
  - describing how consumption, conservation, and waste management practices are related
  - identifying ways the physical environment is related to individual and community health
- examine individual, family, and community roles and responsibilities by:
  - investigating a variety of resources (e.g., current events, surveys, children's magazines) and explain ways in which consumers are addressing the effects of renewable resources on the environment
  - describing jobs carried out by people at school and in the community that support success in school

Big Idea: Financial Literacy

Financial literacy provides knowledge so that students are responsible for their personal economic well-being. As consumers, individuals need economic knowledge as a base for making financial decisions impacting short and long term goals throughout one's lifetime. Financial literacy will empower students by providing them with the skills and awareness needed to establish a foundation for a future of financial responsibility and economic independence.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- management of financial resources is needed to meet goals of individuals and families.
- budgets are a basic component in making financial decisions.
- various services are provided by financial institutions (e.g., banks, credit unions).

Grade 4 Skills and Concepts

Students will

- explain how financial management is needed to meet goals of individuals and families by:
  - identifying goals pertaining to money that might affect individuals and families
  - describing different ways to save and invest money (e.g., piggy bank, local bank, savings bonds)
- define credit and how it can be used to make purchases
- explain the purpose of a budget and define the basic components (income, expenses, savings)
- investigate basic services (e.g., deposits, check cashing) provided by financial institutions (e.g., banks, credit unions)

Big Idea: Career Awareness, Exploration, Planning

Career awareness, exploration and planning gives students the opportunity to discover the various career areas that exist and introduce them to the realities involved with the workplace. Many factors need to be considered when selecting a career path and preparing for employment. Career awareness, exploration and planning will enable students to recognize the value of education and learn how to plan for careers. The relationship between academics and jobs/careers will enable students to make vital connections that will give meaning to their learning.

Academic Expectations

2.36 Students use strategies for choosing and preparing for a career.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
5.4 Students use a decision-making process to make informed decision among options.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- people need to work to meet basic needs.
- a variety of career choices are available in planning for job/careers.
- the connection between work and academics can influence one's future job/career.
- individual and societal needs can impact future jobs/careers.
- self-knowledge is an important part of the career planning process.

Grade 4 Skills and Concepts

Students will

- explain why people need to work (e.g., chores, jobs, employment) to meet basic needs (e.g., food, clothing, shelter)
- recognize that the roles of individuals at home, in the workplace, and in the community are constantly changing
- investigate the connection between work and learning and how it can influence one's future job/career by:
  - explaining different jobs/careers that use what they learn in school (mathematics, reading/writing, science, social studies) impacts future jobs/careers
  - describing work done by school personnel and other individuals in the community
- evaluate how individual and societal needs can impact future jobs/careers by:
  - recognizing how career choices may change as a person matures
  - examining and grouping careers in clusters
- recognize self-knowledge (e.g., interests, abilities) is helpful when selecting and preparing for a career path and that unique interests may lead to career choices

Big Idea: Employability Skills

Employability skills will focus on student's competencies with their work habits and academic/technical skills that will impact an individual's success in school and workplace. School-to-work transition skills will help students develop interpersonal skills and positive work habits.

Academic Expectations

2.36 Students use strategies for choosing and preparing for a career.

Students demonstrate skills and work habits that lead to success in future schooling and work.

3.7 Students demonstrate the ability to make decisions based on ethical values.

4.1 Students effectively use interpersonal skills.

4.2 Students use productive team membership skills.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- interpersonal skills are needed to be a responsible friend, family and team member.
- attitudes and work habits contribute to success at home, school and work.
- academics contribute to obtaining and succeeding in employment.

Grade 4 Skills and Concepts

Students will

- explain how interpersonal skills are needed to be a responsible friend, family and team member by:
  - identifying ways to cooperate at both home and school
  - learning the importance of developing good team skills (e.g., cooperation, communication) and explain how these skills are used to complete tasks
  - demonstrating how to work cooperatively by contributing ideas, suggestions and efforts
- describe how attitudes and work habits contribute to success at home, school and work by:
  - describing study skills needed in school
  - developing personal responsibilities for their own learning and behaviors
  - explaining how effective communication skills (e.g., reading, writing, speaking, and listening) impacts work-related situations and give examples for success at home, school and work
  - learning how to follow routines (e.g., rules, schedules, directions) with minimal supervision
  - identifying consequences for actions when disobeying rules and routines
  - identifying the importance of developing good work habits
- examine potential job/careers in the community
- identify how employability skills prepare them for obtaining and maintaining employment
- identify ways academics can impact success in employment

Big Idea: Communication/Technology

Special communication and technology skills are needed for success in schooling and in the workplace. Students will be able to express information and ideas using a variety of technologies in various ways.

Academic Expectations

1.16 Students use computers and other kinds of technology to collect, organize, and communicate information and ideas.

2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.

Grade 4 Enduring Knowledge – Understandings

Students will understand that

- technology skills can enhance learning and impact productivity at home, school and the workplace.
- communication skills is essential for jobs/careers.

Grade 4 Skills and Concepts

Students will

- explore how technology is used in different jobs/careers

investigate how technology in school and at work enhances learning and provide access to information and resources by:

  - explain how technology tools (e.g., computer programs, Internet, email, cell phones) are used in homes, schools and jobs

- identify ways written communication skills are used at school and in the workplace

Kentucky Core Academic Standards – Vocational Studies – Fifth Grade

The vocational studies program at the fifth grade develops an awareness of careers. This awareness includes the purpose of having a job, concepts of consumer decision-making, saving money, and connections between work and learning. The challenge is to empower students to make a connection between school and the world of work and to be productive citizens.

The fifth grade provides appropriate opportunities for students to be involved in activities designed to develop an appreciation of work and an awareness of self and jobs/careers. They should examine the relationship between school studies and work; this will enable them to make vital connections that will give meaning to their learning. Elementary students should begin to develop work habits, study skills, team skills and set short-term goals.

The vocational studies program at the fifth grade includes active, hands-on work with concrete materials and appropriate technologies. Although the vocational studies program for fifth grade is divided into five areas, each area is designed to interact with the others in an integrated fashion. Because of this integration, students are able to develop broad conceptual understandings in vocational studies. All content teachers are responsible for providing instruction in the vocational studies area.

The vocational studies content standards at the fifth grade are directly aligned with Kentucky's **Academic Expectations.** The Vocational Studies standards are organized around five "Big Ideas" that are important to the discipline of Vocational Studies. These big ideas are: Consumer Decisions, Financial Literacy, Career Awareness/Exploration/Planning, Employability Skills, and Communication/Technology. The Big Ideas are conceptual organizers for vocational studies and are the same at each grade level. This ensures students have multiple opportunities throughout their school career to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of vocational studies. The understandings represent the desired results- that focus on learning, and the knowledge students will have to explain or apply. Understandings can be used to frame development of units of study and lessons plans.

Skills and concepts describe the ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for vocational studies are fundamental to career awareness and builds on prior learning.

Academic Expectations 2.36 and 2.37 bring forward the career awareness in Vocational Studies. Vocational Studies provide a connection to Kentucky Learning Goal 3 (become self-sufficient individual) and Learning Goal 4 (become a responsible group members). These connections provide a comprehensive link between essential content, skills and abilities important to learning.

Big Idea: Consumer Decisions

Individual and families need to make consumer decisions due to the numerous products/services on the market, multiple advertising techniques, and the need to make responsible financial management decisions. Accessing and assessing consumer information, comparing and evaluating products and services, provides basis for making effective consumer decisions. Consumer decisions influence the use of resources and the impact they have on the community and environment.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- fundamental economic concepts are important for consumer decision-making.
- culture, media and technology can influence consumer decisions.
- values have a role in making consumer decision.
- consumer actions (e.g., reusing, reducing, recycling) influence the use of resources and impact the environment.
- an individual has multiple life roles that impact responsibility to be a valuable family and community member.

Grade 5 Skills and Concepts

Students will

- investigate economic concepts and why they are important for consumer decisions by:
  - analyzing the differences between needs and wants and how individuals and families make choices
  - determining ways in which goods and services used by families impact the environment
  - recognizing the relationship between supply and demand and its role in meeting consumer needs
- describe how culture, media and technology can influence consumer decisions by:
  - identifying the ways family and consumer resources are impacted by the environment
  - comparing and evaluating products and services based on major factors (e.g., price, quality, features) when making consumer decisions
  - identifying advertising techniques (bandwagon, facts and figures, emotional appeal, endorsement/testimonial) and explain how they impact the consumer
- analyze ways that an individual has rights and responsibilities as a consumer
- describe how consumer actions (e.g., reusing, reducing, recycling) influence the use of resources and impact the environment by:
  - describing some community activities that promote healthy environments
- examine individual, family, and community roles and responsibilities by:
  - investigating a variety of resources and explain ways in which consumers are addressing the effects of renewable resources on the environment
  - describing jobs carried out by people at school and in the community that support success in school

Big Idea: Financial Literacy

Financial literacy provides knowledge so that students are responsible for their personal economic well-being. As consumers, individuals need economic knowledge as a base for making financial decisions impacting short and long term goals throughout one's lifetime. Financial literacy will empower students by providing them with the skills and awareness needed to establish a foundation for a future of financial responsibility and economic independence.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- management of financial resources is needed to meet goals of individuals and families.
- saving plans and budgets are a basic component in making financial decisions.
- various services are provided by financial institutions (e.g., banks, credit unions).

Grade 5 Skills and Concepts

Students will

- explain how financial management is needed to meet goals of individuals and families by:
  - investigating goals pertaining to money that might affect individuals and families
  - describing various types of expenses (e.g., food, clothing, entertainment) and savings (e.g., piggy bank, bank account, savings bonds)
- investigate savings plans and budgets in making financial decisions by:
  - developing a simple savings plan that would achieve a specific goal
  - explaining the purpose of a budget and define the basic components (income, expenses, savings)
- explain credit and the affect of having fees with credit
- describe how basic services (e.g., deposits, check cashing) are provided by financial institutions (e.g., banks, credit unions)

Big Idea: Career Awareness, Exploration, Planning

Career awareness, exploration and planning gives students the opportunity to discover the various career areas that exist and introduce them to the realities involved with the workplace. Many factors need to be considered when selecting a career path and preparing for employment. Career awareness, exploration and planning will enable students to recognize the value of education and learn how to plan for careers. The relationship between academics and jobs/careers will enable students to make vital connections that will give meaning to their learning.

Academic Expectations

2.36 Students use strategies for choosing and preparing for a career.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
5.4 Students use a decision-making process to make informed decision among options.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- people need to work to meet basic needs.
- a variety of career choices are available in planning for job/careers.
- the connection between work and academics can influence one's future job/career.
- individual and societal needs can impact future jobs/careers.
- awareness of career opportunities and the skills needed for different careers is an important part of the career planning process.
- an Individual Learning Plan (ILP) is an academic and career planning tool.
- self-knowledge is an important part of the career planning process.

Grade 5 Skills and Concepts

Students will

- explain that people need to work (e.g., chores, jobs, employment) to meet basic needs (e.g., food, clothing, shelter), provide self-satisfaction and enjoyment
- investigate a variety of career choices available in planning for jobs/careers by:
  - identifying different job opportunities in the home, school, and community (e.g., home business, flexible schedule)
  - recognizing that the roles of individuals at home, in the workplace, and in the community are constantly changing
- analyze the connection between work and academics which can influence one's future job/careers by:
  - explaining different jobs/careers that use what they learn in school (e.g., mathematics, reading/writing, science, social studies) impacts future jobs/careers
  - explaining how educational planning can impact future career opportunities
  - researching career choice through the use of technology
- evaluate how individual and societal needs can impact future jobs/careers by:
  - describing the impact of individual interests and abilities on career choices
  - identifying and describe jobs in career clusters (e.g., Arts and Humanities, Construction, Manufacturing, Science and Mathematics)
- recognize sources of career information (e.g., Career Day, guest speaker, field trips, informal personal surveys)
- identify the components of an Individual Learning Plan (ILP)
- recognize how self-knowledge (e.g., interests, abilities) is helpful when selecting and preparing for a career path and that unique interests may lead to career choices

Big Idea: Employability Skills

Employability skills will focus on student's competencies with their work habits and academic/technical skills that will impact an individual's success in school and workplace. School-to-work transition skills will help students develop interpersonal skills and positive work habits.

Academic Expectations

2.36 Students use strategies for choosing and preparing for a career.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
2.38 Students demonstrate skills such as interviewing, writing résumé and completing applications that are needed to be accepted into college or other postsecondary training or to get a job.
3.8 Students demonstrate the ability to make decisions based on ethical values.
4.1 Students effectively use interpersonal skills.
4.2 Students use productive team membership skills.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- interpersonal skills are needed to be a responsible friend, family and team member.
- attitudes and work habits contribute to success at home, school and work.
- academics contribute to obtaining and succeeding in employment.

Grade 5 Skills and Concepts

Students will

- explain how interpersonal skills are needed to be a responsible friend, family and team member by:
  - examining ways to cooperate at home, school and work
  - demonstrating effective group interaction strategies (e.g., communicating effectively, conflict resolution, compromise) to develop team skills
  - explaining the importance of working cooperatively with others by contributing ideas, suggestions and efforts to complete a task
- describe how attitudes and work habits contribute to success at home, school and work by:
  - describing study skills needed in school
  - explaining how attitudes and work habits transfer from the home and school to the workplace
  - explaining how effective communication skills (e.g., reading, writing, speaking, and listening) impact work-related situations and give examples for success at home, school and work
  - identifying consequences for actions when disobeying rules and routines when employed
  - identifying the importance of developing good work habits (e.g., attendance, work done on time, follow directions)
- examine potential job/careers in the community
- describe employability skills needed to prepare individuals for obtaining and maintaining employment
- explain how success in an academic course of study could contribute to the ability to achieve and succeed in employment (e.g., Science/Medicine, Language Arts/Librarian)

Big Idea: Communication/Technology

Special communication and technology skills are needed for success in schooling and in the workplace. Students will be able to express information and ideas using a variety of technologies in various ways.

Academic Expectations

1.16 Students use computers and other kinds of technology to collect, organize, and communicate information and ideas.

2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.

Grade 5 Enduring Knowledge – Understandings

Students will understand that

- technology skills can enhance learning and impact productivity at home, school and the workplace.
- communication skills are used in a variety of ways at home, school and in the workplace.

Grade 5 Skills and Concepts

Students will

- evaluate how technology tools (e.g., computer programs, Internet, email, cell phones) are used in homes, schools and jobs by:
  - explaining how technology provides access to information and resources at home, school and the workplace
- demonstrate how to work cooperatively and collaboratively with peers when using technology in the classroom by:
  - explaining how written communication skills are used at school and in the workplace

SECONDARY EDUCATION

Secondary: Middle Level and High School Education

In the twenty-first century, Kentucky's students successful transition to postsecondary education, the workforce, and the military requires a middle level and high school education program that provide a range of relevant, meaningful and rigorous academic opportunities anchored in real-life contexts for learning. At these levels, schools support students in developing a personal connection to the school and caring adults. The curriculum reflects the core belief that all students are capable of learning at high levels and focuses on the goal of preparing every student for active, responsible citizenship and lifelong learning.

Students at the middle and high school levels are developing possible career interests and exploring careers while continuing to develop a strong academic foundation through a variety of learning opportunities. As students progress through the middle and high school level programs, students increase their depth of knowledge and understandings of the content areas, develop and apply more advanced skills and concepts to support their understandings, and increase the complexity of the application and integration of knowledge. In order to achieve these results, districts and schools assist students in planning for their choices and provide the opportunity for each student to learn. Schools provide individual supports for learning that are essential for students to access the curriculum, achieve at high levels and maximize successful transition to postsecondary choices.

The goal of secondary education is to make the middle level and high school experience meaningful for every student. The Kentucky Board of Education has established the following expectations for secondary education:

- Every student will graduate and hold a diploma that credentials proficiency and college and work place readiness. The diploma will be a student's passport to the next level of learning and career opportunity.
- Every student's educational experience will be guided by an Individual Learning Plan (ILP) for lifelong learning. The student will be supported by participation in a rigorous curriculum, an environment of high expectations, and relevant learning opportunities.
- Every student will be engaged in ongoing, meaningful conversations with educators, parents and other caring adults who place high priority on helping that student reach his or her learning goals.

Individual Learning Plan

Beginning with the graduating class of 2013, all Kentucky students will have an Individual Learning Plan (ILP) by the end of the sixth grade year to guide their middle level and high school learning experiences. An ILP is a comprehensive learning plan that emphasizes academic and career development for each student. A district shall implement a comprehensive advising and guidance process throughout the middle level and high school experience to provide support for the development and implementation of an ILP for each student.

Local districts shall develop a method to evaluate the effectiveness and the impact of the ILP process. The evaluation method shall include input from students, parents and school staff. As part of the evaluation criteria, the district shall include, but not be limited to, Transition to Adult Life data.

Middle level and high schools within each district will work cooperatively to ensure that each student and parent receives information regarding:

- Relationship between educational and career opportunities
- Financial planning for postsecondary education

The ILP shall be readily available to each student and his or her parent. Through the advising and guidance process, the ILP is reviewed and approved at least annually by the students, parents and school officials.

The sixth- and seventh-grade years of the ILP process are focused on career exploration and related postsecondary education and training. During the eighth-grade year, teachers, students and parents will set learning goals for the student based on academic and career interests. The completed ILP shall identify required academic courses, electives and extracurricular opportunities aligned to the student's postsecondary goals.

The district and school shall use information from the ILP about student needs to plan academic and elective offerings. Information regarding individual student achievement contained in the ILP and discussed through the advising and guidance process will serve to identify additional supports and interventions that may be necessary for each student's success.

ILPs are not static documents; they change as students progress and as goals change. Schools should develop multiple guidance and advising strategies to ensure that timely and accurate information is available to students as they reassess their ILPs a minimum of once a year.

MIDDLE LEVEL EDUCATION

Middle Level Education

The middle level program, most often viewed as grades six through eight, expands and extends students' learning from the elementary grades and prepares them for the high school experience. It reflects a challenging academic curriculum, provides a variety of relevant learning experiences and supports the developmental needs of students through ongoing, structured relationships with teachers, peers, counselors and other adults. Students at the middle level continue to develop and expand their abilities to solve problems, make connections and integrate knowledge within and across content areas as well as to their own life. They reason and communicate their ideas.

The content standards outlined in the *Kentucky Core Academic Standards* define the middle level curriculum necessary to meet the minimum high school graduation requirements. In addition, effective middle level programs should encompass more than the content outlined in the *Kentucky Core Academic Standards* to fully address Kentucky's learning goals and academic expectations.

Age-appropriate, relevant classroom experiences that enrich and enhance the core curriculum should be included in middle level programs. These opportunities support academic core learning and foster fitness and health. They allow students to pursue personal interests, explore career options and experience the arts. These opportunities may be provided through exploratory or enrichment classes or by integration into the core curriculum.

An effective formal advising and guidance process typically provides all students with at least one adult mentor at the school to guide and encourage them to take rigorous academic courses and to remind them that doing well in school matters to future success.

Content documents for the middle level are arranged sequentially by grade. Schools have the opportunity to create integrated, interdisciplinary or multidisciplinary programs that personalize the educational process for all students and ensure a successful transition to high school.

MIDDLE LEVEL ARTS AND HUMANITIES

Kentucky Core Academic Standards – Arts and Humanities – Sixth Grade

The arts and humanities program in the sixth grade centers on establishing grounding in the arts so that students are able to communicate at a basic level in each of the art forms of dance, drama/theatre, music and visual arts. Emphasis should be placed on exposing students to a variety of arts through active experiences in all four art forms. Students may have already begun to, or at this level choose to focus on one art form for more in-depth study. This will help students to prepare should they choose specialization in one art form at the high school level. Grounding in the arts involves literacy development in the four arts content areas, analysis and critique of the arts, and active creating and performing in the arts.

Students should have the opportunity to learn about the arts in the context of creating and performing. As students create and perform, they learn that the arts are basic to human communication and that they can use the arts to communicate specific meaning through their choices in the use of various arts elements and principles of design.

The arts and humanities content standards at the sixth grade level are directly aligned with Kentucky's broad standards called the **Academic Expectations**. The **Academic Expectations** are directly related to the *National Standards for Arts Education (1994)*.

Arts and humanities grade level content standards are organized around five “Big Ideas” that are important to the arts disciplines. The five big ideas in arts and humanities are: Structures in the Arts, Humanity in the Arts, Purposes for Creating the Arts, Processes in the Arts and Interrelationships Among the Arts. The Big Ideas are conceptual organizers for arts and humanities and are similar at each grade level to ensure students have multiple opportunities throughout their school careers to develop skills and concepts linked to each Big Idea.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of the arts and humanities. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for arts and humanities are fundamental to arts literacy and proficiency, and build on prior learning.

The three arts processes of creating, performing and responding to the arts provide a basis for deep understanding and appreciation of the arts. In the processes of creating and performing, a variety of technologies are employed, ranging from primitive technologies to cutting edge electronic and digital technologies.

Creating involves planning and creating new music, dance, drama/theatre or visual arts, or it may involve improvising in music, dance or drama/theatre. Improvising is the composing of new music, reciting/acting new dramatic material, or creating new dance movements on the spur of the moment.

Performing is limited to the performing arts of music, dance and drama/theatre. Performing involves presenting previously created works for an audience. Although the process of

performing involves following a creative plan conceived by a composer, playwright or choreographer, there is still opportunity for creative interpretations in the performance.

Responding to the arts involves responses on multiple levels. The arts are a tool for communication and are capable of delivering meaning through literal and emotional content. Responding to the emotional content of artworks involves actually feeling the emotion(s) set forth by the creator. Responding can also involve intellectual analysis of works of art in regard to their design, effectiveness and quality.

Academic Expectations 2.25 and 2.26 bring forward the study of the humanities aspects of the arts. The arts reflect time, place, and society and offer a mirror to the human experience. The powerful communication qualities of the arts also enable them to be a factor that can drive the human experience. Study of historical and cultural contests in the arts is an essential and integral part of instruction across all the art forms and across all grade levels.

In the sixth grade, social studies content is focused on world geography. Arts of various world cultures will be explored. Students will experience arts from India, Latin America and countries that have influenced Latin American arts, Japan, China, and once again revisit how African and Native American cultures have influenced arts in the United States as well as Latin influences in the arts of the United States.

Big Idea: Structure in the Arts

Understanding of the various structural components of the arts is critical to the development of other larger concepts in the arts. Structures that artists use include elements and principles of each art form, tools, media and subject matter that impact artistic products and specific styles and genre that provide a context for creating works. It is the artist's choice of these structural components in the creative process that results in a distinctively expressive work. Students make choices about how to use structural organizers to create meaningful works of their own. The more students understand, the greater their ability to produce, interpret or critique artworks from other artists, cultures and historical periods.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.23 Students analyze their own and others' artistic products and performances using accepted standards.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- the elements of music, dance and drama are intentionally applied in creating and performing.
- the elements and principles of design of visual art are intentionally applied in creating works of art.
- responding to or critiquing works of art involves an understanding of elements, principles, and structures appropriate to each area of the arts.
- existing and emerging technologies can inspire new applications of structural components.

Grade 6 Skills and Concepts – Music

Students will

- use appropriate terminology to identify and analyze the use of elements in a variety of music (rhythm, tempo, melody, harmony, form, timbre, dynamics)
- use the elements of music while performing, singing, playing instruments, moving, listening, reading music, writing music and creating music independently and with others
- listen to and explore how changing different elements results in different musical effects
- recognize, describe and compare various styles of music (gospel, Broadway musicals, blues, popular, marches, ballads)
- identify instruments according to classifications (family, voices, folk and orchestral instruments)

Grade 6 Skills and Concepts – Dance

Students will

- use appropriate terminology to identify and analyze the use of elements in a variety of dance (space, time, force) to express thoughts, ideas, and feelings
- observe, describe and demonstrate choreographic forms in dance
- apply elements of dance and principles of movement (e.g., balance, initiation of movement, weight shift) when observing, creating and performing patterns of movement independently and with others
- identify and describe themes and styles (including characteristics of styles) of dance

Big Idea: Structure in the Arts – Continued

Grade 6 Skills and Concepts – Drama/Theatre
Students will

- use appropriate terminology to identify and analyze the use of elements of drama (literary, technical, performance) in a variety of dramatic works
- use the elements of drama in creating and performing dramatic works independently and with others
- observe, describe and apply creative dramatics (improvisation, mimicry, pantomime, role playing and story telling) in a variety of situations
- identify and describe how technical elements (staging, scenery, props, costumes, make-up, lighting, sound) and performance elements (acting, speaking, nonverbal expression) create mood and believable characters
- describe and compare types of stages (arena, thrust, proscenium)
- explore a variety of dramatic works (e.g., theater and dramatic media – film, television, electronic media)

Grade 6 Skills and Concepts – Visual Arts
Students will

- use appropriate terminology to describe and analyze the use of elements of art (line, shape, form, texture, color) and principles of design (emphasis, pattern, balance, contrast) in a variety of visual artworks
- use the elements of art, principles of design and a variety of processes in creating artworks
- apply organizational structures and describe what makes them effective or not effective in communicating ideas
- identify and analyze the use of elements of art (e.g., line, shape, form, texture, primary and secondary colors, color schemes/groups) and principles of design (e.g., focal point, pattern, balance, contrast) in a variety of two and three dimensional artworks
- identify a variety of subject matter in visual artworks (representational – e.g., landscape, portrait, still life, nonrepresentational – e.g., abstract, non-objective)

Big Idea: Humanity in the Arts

The arts reflect the beliefs, feelings and ideals of those who create them. Experiencing the arts allows one to experience time, place and/or personality. By experiencing the arts of various cultures, students can actually gain insight into the beliefs, feelings and ideas of those cultures. Students also have the opportunity to experience how the arts can influence society through analysis of arts in their own lives and the arts of other cultures and historical periods. Studying the historical and cultural stylistic periods in the arts offers students an opportunity to understand the world past and present and to learn to appreciate their own cultural heritage. Looking at the interrelationships of multiple arts disciplines across cultures and historical periods is the focus of humanities in the arts.

Academic Expectations

2.24 Students have knowledge of major works of art, music, and literature and appreciate creativity and the contributions of the arts and humanities.

2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.

2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- the arts are powerful tools for understanding human experiences both past and present.
- the arts help us understand others' (often very different) ways of thinking, working, and expressing ourselves.
- the arts play a major role in the creation and defining of cultures and building civilizations.

Grade 6 Skills and Concepts – Music

Students will

- describe and analyze distinguishing characteristics of music representing a variety of world cultures (Latin America, Asian) and time periods
- listen to, perform and classify music representing a variety of world cultures and historical periods
- examine music from various world cultures and explain how music reflects the culture, cultural beliefs, or blending of cultures; use examples to illustrate how music has directly influenced society or culture
- examine music from various time periods and explain how the influence of time and place are reflected in the music

Grade 6 Skills and Concepts – Dance

Students will

- describe and analyze distinguishing characteristics of dance representing a variety of world cultures (Latin America, Asian) and time periods
- observe, classify and perform dance representing a variety of world cultures and historical periods
- examine dance from various world cultures and explain how dance reflects the culture, cultural beliefs or blending of cultures; use examples to illustrate how dance has directly influenced society or culture
- examine dance from various time periods and explain how the influence of time and place are reflected in the dance

Big Idea: Humanity in the Arts – Continued

Grade 6 Skills and Concepts – Drama/Theatre
Students will

- describe and analyze distinguishing characteristics of dramatic work representing a variety of world cultures (Latin America, Asian) and time periods
- observe, classify and perform dramatic works representing a variety of world cultures and historical periods
- examine dramatic works from various world cultures and explain how dramatic works reflect the culture, cultural beliefs or blending of cultures; use examples to illustrate how dramatic works have directly influenced society or culture
- examine dramatic works from various time periods and explain how the influence of time and place are reflected in them
- use print and non-print sources to explore, describe and compare themes, characters, and situations in dramas from different cultures or time periods (e.g., Native American and African influences on American storytelling)

Grade 6 Skills and Concepts – Visual Arts
Students will

- describe and analyze distinguishing characteristics of visual art representing a variety of world cultures (Latin America, Asian) and time periods
- observe, classify and create visual art according to styles and processes used in a variety of world cultures and historical periods
- examine visual artworks from various world cultures and explain how artworks reflect the culture, cultural beliefs or blending of cultures; use examples to illustrate how artworks have directly influenced society or culture
- examine visual artworks from various time periods and explain the influence of time and place that are reflected in them
- use print and non-print sources to explore, describe, and compare themes, characters, and situations in artworks from different cultures or time periods

Big Idea: Purposes for Creating the Arts

The arts have played a major role throughout the history of humans. As the result of the power of the arts to communicate on a basic human level, they continue to serve a variety of purposes in society. The arts are used for artistic expression to portray specific emotions or feelings, to tell stories in a narrative manner, to imitate nature and to persuade others. The arts bring meaning to ceremonies, rituals, celebrations and commemorations. Additionally, they are used for recreation and to support recreational activities. Students experience the arts in a variety of roles through their own creations and performances and through those of others. Through their activities and observations, students learn to create arts and use them for a variety of purposes in society.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- the arts fulfill a variety of purposes in society (e.g., to present issues and ideas, to entertain, to teach or persuade, to design, plan and beautify).
- the arts have value and significance for daily life. They provide personal fulfillment, whether in career settings, avocational pursuits, or leisure.
- the arts provide forms of nonverbal communication that can strengthen the presentation of ideas and emotions.

Grade 6 Skills and Concepts – Music

Students will

- compare and explain purposes for which music is created to fulfill (ceremonial, recreational, artistic expression)
- create new, listen to, choose and perform music to fulfill a variety of specific purposes

Grade 6 Skills and Concepts – Dance

Students will

- compare and explain purposes for which dance is created (ceremonial, recreational, artistic expression)
- create new, observe, choose and perform dance to fulfill a variety of specific purposes

Grade 6 Skills and Concepts – Drama/Theatre

Students will

- compare and explain purposes for which drama/theatre is created (sharing the human experience, passing on tradition and culture, recreational, artistic expression)
- create or write new, observe, choose and perform dramatic works to fulfill a variety of specific purposes

Grade 6 Skills and Concepts – Visual Arts

Students will

- compare and explain purposes for which visual art is created (ceremonial, artistic expression, narrative, functional)
- create new, choose and experience artworks created to fulfill a variety of specific purposes

Big Idea: Processes in the Arts

There are three distinctive processes involved in the arts. These processes are creating new works, performing works for expressive purposes and responding to artworks. Each process is critical and relies on others for completion. Artists create works to express ideas, feelings or beliefs. The visual arts capture a moment in time while the performing arts (music, dance, drama/theatre) are performed for a live audience. The audience responds to the artistic expressions emotionally and intellectually based on the meaning of the work. Each process enhances understanding, abilities and appreciation of others. Students involved in these processes over time will gain a great appreciation for the arts, for artists past and present, and for the value of artistic expression.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- there are three distinct processes for involvement in the arts; creating new artworks, performing works previously created and responding to artworks and performances.
- full understanding and appreciation of the arts requires some degree of involvement in all three processes.
- openness, respect for work and an understanding of how artists apply elements and principles of design in creating and performing are personal attitudes and skills that enhance enjoyment of the observer.
- existing and emerging technologies can extend the reach of the art form to new audiences.

Grade 6 Skills and Concepts – Music

Students will

- be actively involved in creating, notating, improvising and performing music (e.g., similar style answers to musical phrases, variations on given melodies, demonstrating unity/variety, tension/release, and balance) alone and with others
- use knowledge of musical elements to create and perform music in an expressive manner
- sing or play alone and with others examples of music with increasingly complex melodies and rhythmic patterns in treble and bass clef (with practice)
- use knowledge of the elements of music and music terminology to describe and critique their own performances and the performances of others
- identify and apply criteria for evaluating music (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of music being performed; discuss opinions with peers in a supportive and constructive way

Big Idea: Processes in the Arts – Continued

Grade 6 Skills and Concepts – Dance
Students will

- be actively involved in creating and performing dance (incorporating the elements of dance: space, time and force) alone and with others
- create an improvisational dance with complex movements (beginning, middle and end)
- use knowledge of dance elements to create and perform dance in an expressive manner
- use knowledge of the elements of dance and dance terminology to describe and critique their own performances and the performances of others
- identify and apply criteria for evaluating dance (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of dance being performed; discuss opinions with peers in a supportive and constructive way

Grade 6 Skills and Concepts – Drama/Theatre
Students will

- be actively involved in creating, improvising and performing dramatic works alone and with others, using elements of drama (Literary, Technical, Performance)
- use knowledge of elements of drama to:
  - create and perform dramatic works in an expressive manner
  - describe and critique their own performances and the performances of others
- use a variety of resources (e.g., research, peers, technology) to:
  - write, refine and record dialogue, monologues, and action
  - explore jobs/careers and skills associated with dramatic arts (theater, media)
- identify and apply criteria for evaluating dramatic works (e.g., skill of performers, originality, emotional impact, variety, interest, technical requirements: lighting, sound, scenery, costumes)
- demonstrate behavior appropriate for observing the particular context and style of dramatic works being performed; discuss opinions with peers in a supportive and constructive way

Grade 6 Arts Skills and Concepts – Visual
Students will

- be actively involved in selecting media, techniques and processes for creating artworks applying the elements of art and principles of design
- use knowledge of the elements and principles of art and art terminology to:
  - create expressive artworks
  - describe and critique their own work and the work of others
- identify and apply criteria for evaluating visual (e.g., skill of artist, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of the artwork being viewed; discuss opinions with peers in a supportive and constructive way
- describe personal responses to artwork; explain why there might be different responses to specific works of art (e.g., personal experience, interest, medium used, effectiveness of message)

Big Idea: Interrelationships Among the Arts

The arts share commonalities in structures, purposes, creative processes, and their ability to express ideals, feelings and emotions. Studying interrelationships among the arts enables students to get a broad view of the expressiveness of the art forms as a whole, and helps to develop a full appreciation of the arts as a mirror of human kind.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.
2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- the arts are basic forms of human communication.
- music, dance, drama and visual art created in common cultures and/or common historical periods tend to reflect common attitudes, ideas, beliefs and feelings.
- the arts provide forms of non-verbal communication that can strengthen the presentation of ideas and emotions.
- the modes of thinking and methods of the arts disciplines can be used to illuminate situations in other disciplines that require creative solutions.

Grade 6 Skills and Concepts – Arts

Students will

- recognize common terms and concepts used in various arts (e.g., tempo in dance and music)
- identify communication of common themes or ideas across different art forms
- identify and explain connections between and among different art forms from the same culture or from the same time period
- describe commonalities between the arts and other subjects taught in the school (e.g., observation skills in visual arts and science, historical and cultural perspectives in the arts and social studies, shape in visual art and mathematics, dance and a healthy lifestyle, fractions in music notation and mathematics, composing music and writing)
- communicate common meaning through creating and performing in the four art forms

Kentucky Core Academic Standards – Arts and Humanities – Seventh Grade

The arts and humanities program in the seventh grade centers on establishing grounding in the arts so that students are able to communicate at a basic level in each of the art forms of dance, drama/theatre, music and visual arts. Emphasis should be placed on exposing students to a variety of arts through active experiences in all four art forms. Students may have already begun to, or at this level choose to focus on one art form for more in-depth study. This will help students to prepare should they choose specialization in one art form at the high school level. Grounding in the arts involves literacy development in the four arts content areas, analysis and critique of the arts, and active creating and performing in the arts.

Students should have the opportunity to learn about the arts in the context of creating and performing. As students create and perform, they learn that the arts are basic to human communication and that they can use the arts to communicate specific meaning through their choices in the use of various arts elements and principles of design.

The arts and humanities content standards at the seventh grade level are directly aligned with Kentucky's broad standards called the **Academic Expectations**. The **Academic Expectations** are directly related to the *National Standards for Arts Education (1994)*.

Arts and humanities grade level content standards are organized around five “Big Ideas” that are important to the arts disciplines. The five big ideas in arts and humanities are: Structures in the Arts, Humanity in the Arts, Purposes for Creating the Arts, Processes in the Arts and Interrelationships Among the Arts. The Big Ideas are conceptual organizers for arts and humanities and are similar at each grade level to ensure students have multiple opportunities throughout their school careers to develop skills and concepts linked to each Big Idea.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of the arts and humanities. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for arts and humanities are fundamental to arts literacy and proficiency, and build on prior learning.

The three arts processes of creating, performing and responding to the arts provide a basis for deep understanding and appreciation of the arts. In the processes of creating and performing, a variety of technologies are employed, ranging from primitive technologies to cutting edge electronic and digital technologies.

Creating involves planning and creating new music, dance, drama/theatre or visual arts, or it may involve improvising in music, dance or drama/theatre. Improvising is the composing of new music, reciting/acting new dramatic material, or creating new dance movements on the spur of the moment.

Performing is limited to the performing arts of music, dance and drama/theatre. Performing involves presenting previously created works for an audience. Although the process of

performing involves following a creative plan conceived by a composer, playwright or choreographer, there is still opportunity for creative interpretations in the performance.

Responding to the arts involves responses on multiple levels. The arts are a tool for communication and are capable of delivering meaning through literal and emotional content. Responding to the emotional content of artworks involves actually feeling the emotion(s) set forth by the creator. Responding can also involve intellectual analysis of works of art in regard to their design, effectiveness and quality.

Academic Expectations 2.25 and 2.26 bring forward the study of the humanities aspects of the arts. The arts reflect time, place, and society and offer a mirror to the human experience. The powerful communication qualities of the arts also enable them to be a factor that can drive the human experience. Study of historical and cultural contests in the arts is an essential and integral part of instruction across all the art forms and across all grade levels.

In the seventh grade, social studies content is focused on ancient civilizations. Arts of various old world civilizations will be explored. Students will experience arts from ancient Egypt, Greece and Rome, as well as arts from the medieval period in European history.

Big Idea: Structure in the Arts

Understanding of the various structural components of the arts is critical to the development of other larger concepts in the arts. Structures that artists use include elements and principles of each art form, tools, media and subject matter that impact artistic products, and specific styles and genre that provide a context for creating works. It is the artist's choice of these structural components in the creative process that results in a distinctively expressive work. Students make choices about how to use structural organizers to create meaningful works of their own. The more students understand, the greater their ability to produce, interpret or critique artworks from other artists, cultures and historical periods.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.23 Students analyze their own and others' artistic products and performances using accepted standards.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- the elements of music, dance and drama are intentionally applied in creating and performing.
- the elements and principles of design of visual art are intentionally applied in creating works of art.
- responding to or critiquing works of art involves an understanding of elements, principles, and structures appropriate to each area of the arts.
- Existing and emerging technologies can inspire new applications of structural components.

Grade 7 Skills and Concepts – Music

Students will

- use appropriate terminology to identify and analyze the use of elements in a variety of music (rhythm, tempo, melody, harmony, form, timbre, dynamics)
- use the elements of music while performing, singing, playing instruments, moving, listening, reading music, writing music and creating music independently and with others
- listen to and explore how changing different elements results in different musical effects
- recognize, describe and compare various styles of music (gospel, Broadway musicals, blues, popular, marches, ballads)
- identify instruments according to classifications (family, voices, folk and orchestral instruments)

Grade 7 Skills and Concepts – Dance

Students will

- use appropriate terminology to identify and analyze the use of elements in a variety of dance (space, time, force)
- observe, describe and demonstrate choreographic forms in dance
- apply elements of dance and principles of movement (e.g., balance, initiation of movement, weight shift) when observing, creating and performing patterns of movement independently and with others
- identify and describe themes and styles (including characteristics of styles) of dance

Big Idea: Structure in the Arts – Continued

Grade 7 Skills and Concepts – Drama/Theatre
Students will

- use appropriate terminology to identify and analyze the use of elements of drama (literary, technical, performance) in a variety of dramatic works
- use the elements of drama in creating and performing dramatic works independently and with others
- observe, describe and apply creative dramatics (improvisation, mimicry, pantomime, role playing and story telling) in a variety of situations
- identify and describe how technical elements (staging, scenery, props, costumes, make-up, lighting, sound) and performance elements (acting, speaking, nonverbal expression) create mood and believable characters
- describe and compare types of stages (arena, thrust, proscenium)
- explore a variety of dramatic works (e.g., theater and dramatic media – film, television, electronic media)

Grade 7 Skills and Concepts – Visual Arts
Students will

- use appropriate terminology to describe and analyze the use of elements of art (line, shape, form, texture, color) and principles of design (emphasis, pattern, balance, contrast) in a variety of visual artworks
- use the elements of art, principles of design, and a variety of processes in creating artworks
- apply organizational structures and describe what makes them effective or not effective in communicating ideas
- identify and analyze the use of elements of art (e.g., line, shape, color properties, color schemes/groups, form, texture, space, value) and principles of design (e.g., repetition, emphasis, pattern, balance, contrast, rhythm, proportion, movement) in a variety of two and three dimensional artworks
- identify a variety of subject matter in visual artworks (representational – e.g., landscape, portrait, still life, nonrepresentational – e.g., abstract, non-objective)

Big Idea: Humanity in the Arts

The arts reflect the beliefs, feelings and ideals of those who create them. Experiencing the arts allows one to experience time, place and/or personality. By experiencing the arts of various cultures, students can actually gain insight into the beliefs, feelings and ideas of those cultures. Students also have the opportunity to experience how the arts can influence society through analysis of arts in their own lives and the arts of other cultures and historical periods. Studying the historical and cultural stylistic periods in the arts offers students an opportunity to understand the world past and present, and to learn to appreciate their own cultural heritage. Looking at the interrelationships of multiple arts disciplines across cultures and historical periods is the focus of humanities in the arts.

Academic Expectations

2.24 Students have knowledge of major works of art, music, and literature and appreciate creativity and the contributions of the arts and humanities.

2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.

2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- the arts are powerful tools for understanding human experiences both past and present.
- the arts help us understand others' (often very different) ways of thinking, working, and expressing ourselves.
- the arts play a major role in the creation and defining of cultures and building civilizations.

Grade 7 Skills and Concepts – Music

Students will

- describe and analyze distinguishing characteristics of music representing a variety of world cultures (e.g., Classical Greece-Pythagoras' music theory) and historical periods (e.g., Medieval)
- listen to, perform and classify music representing a variety of world cultures and historical periods
- examine music from various world cultures and explain how music reflects the culture, cultural beliefs, or blending of cultures; use examples to illustrate how music has directly influenced society or culture
- examine music from various time periods and explain how the influence of time and place are reflected in the music

Grade 7 Skills and Concepts – Dance

Students will

- describe and analyze distinguishing characteristics of dance representing a variety of world cultures and historical periods (e.g., Medieval)
- observe, classify and perform dance representing a variety of world cultures and historical periods
- examine dance from various world cultures and explain how dance reflects the culture, cultural beliefs or blending of cultures; use examples to illustrate how dance has directly influenced society or culture
- examine dance from various time periods and explain how the influence of time and place are reflected in the dance

Big Idea: Humanity in the Arts – Continued

Grade 7 Skills and Concepts – Drama/Theatre
Students will

- describe and analyze distinguishing characteristics of dramatic work representing a variety of world cultures (e.g., Classical Greece and Ancient Rome) and historical periods (e.g., Medieval)
- observe, classify and perform dramatic works representing a variety of world cultures and historical periods
- examine dramatic works from various world cultures and explain how dramatic works reflect the culture, cultural beliefs or blending of cultures; use examples to illustrate how dramatic works have directly influenced society or culture
- examine dramatic works from various time periods and explain how the influence of time and place are reflected in them
- use print and non-print sources to explore, describe, and compare themes, characters, and situations in dramas from different cultures or time periods (e.g., universal ideal of beauty through logic, order, reason, and moderation, Morality plays - characters are personification of good and evil in a struggle for man's soul)

Grade 7 Skills and Concepts – Visual Arts
Students will

- describe and analyze distinguishing characteristics of visual art representing a variety of world cultures (e.g., Classical Greece, Ancient Rome and Egypt) and historical periods (e.g., Medieval)
- observe, classify and create visual art according to styles and processes used in a variety of world cultures and historical periods
- examine visual artworks from various world cultures and explain how artworks reflect the culture, cultural beliefs or blending of cultures; use examples to illustrate how artworks have directly influenced society or culture
- examine visual artworks from various time periods and explain the influence of time and place that are reflected in them
- use print and non-print sources to explore, describe and compare themes, characters, and situations in artworks from different cultures or time periods

Big Idea: Purposes for Creating the Arts

The arts have played a major role throughout the history of humans. As the result of the power of the arts to communicate on a basic human level, they continue to serve a variety of purposes in society. The arts are used for artistic expression to portray specific emotions or feelings, to tell stories in a narrative manner, to imitate nature and to persuade others. The arts bring meaning to ceremonies, rituals, celebrations and commemorations. Additionally, they are used for recreation and to support recreational activities. Students experience the arts in a variety of roles through their own creations and performances and through those of others. Through their activities and observations, students learn to create arts and use them for a variety of purposes in society.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- the arts fulfill a variety of purposes in society (e.g., to present issues and ideas, to entertain, to teach or persuade, to design, plan and beautify).
- the arts have value and significance for daily life. They provide personal fulfillment, whether in career settings, avocational pursuits, or leisure.
- the arts provide forms of nonverbal communication that can strengthen the presentation of ideas and emotions.

Grade 7 Skills and Concepts – Music

Students will

- compare and explain purposes for which music is created to fulfill (ceremonial, recreational, artistic expression)
- create new, listen to, choose and perform music to fulfill a variety of specific purposes

Grade 7 Skills and Concepts – Dance

Students will

- compare and explain purposes for which dance is created (ceremonial, recreational, artistic expression)
- create new, observe, choose and perform dance to fulfill a variety of specific purposes

Grade 7 Skills and Concepts – Drama/Theatre

Students will

- compare and explain purposes for which drama/theatre is created (sharing the human experience, passing on tradition and culture, recreational, artistic expression)
- create or write new, observe, choose and perform dramatic works to fulfill a variety of specific purposes

Grade 7 Skills and Concepts – Visual Arts

Students will

- compare and explain purposes for which visual art is created (ceremonial, artistic expression, narrative, functional, persuasive)
- create new, choose and experience artworks created to fulfill a variety of specific purposes

Big Idea: Processes in the Arts

There are three distinctive processes involved in the arts. These processes are creating new works, performing works for expressive purposes and responding to artworks. Each process is critical and relies on others for completion. Artists create works to express ideas, feelings or beliefs. The visual arts capture a moment in time while the performing arts (music, dance, drama/theatre) are performed for a live audience. The audience responds to the artistic expressions emotionally and intellectually based on the meaning of the work. Each process enhances understanding, abilities and appreciation of others. Students involved in these processes over time will gain a great appreciation for the arts, for artists past and present, and for the value of artistic expression.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- there are three distinct processes for involvement in the arts; creating new artworks, performing works previously created and responding to artworks and performances.
- full understanding and appreciation of the arts requires some degree of involvement in all three processes.
- openness, respect for work and an understanding of how artists apply elements and principles of design in creating and performing are personal attitudes and skills that enhance enjoyment of the observer.
- existing and emerging technologies can extend the reach of the art form to audiences.

Grade 7 Skills and Concepts – Music

Students will

- be actively involved in creating, notating, improvising and performing music (e.g., similar style answers to musical phrases, variations on given melodies, demonstrating unity/variety, tension/release, and balance) alone and with others
- use knowledge of musical elements and a variety of sound sources to create and perform music in an expressive manner
- sing or play alone and with others examples of music with increasingly complex melodies and rhythmic patterns in treble and bass clef (with practice)
- use knowledge of the elements of music and music terminology to describe and critique their own performances and the performances of others
- identify and apply criteria for evaluating music (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of music being performed; discuss opinions with peers in a supportive and constructive way

Big Idea: Processes in the Arts – Continued

Grade 7 Skills and Concepts – Dance
Students will

- be actively involved (individually and in small groups) in creating and performing dance (using the elements of dance: space, time and force) in a variety of compositional forms (AB, ABA, call and response, or narrative)
- create an improvisational dance with complex movements (beginning, middle and end)
- use knowledge of dance elements to create and perform dance in an expressive manner
- use knowledge of the elements of dance and dance terminology to describe and critique their own performances and the performances of others
- identify and apply criteria for evaluating dance (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of dance being performed; discuss opinions with peers in a supportive and constructive way

Grade 7 Skills and Concepts – Drama/Theatre
Students will

- be actively involved in creating, improvising and performing dramatic works alone and with others, using elements of drama (Literary, Technical, Performance)
- use knowledge of elements of drama to:
  - create and perform dramatic works in an expressive manner
  - describe and critique their own performances and the performances of others
- use a variety of resources (e.g., research, peers, technology) to
  - write, refine and record dialogue, monologues, and action
  - explore jobs/careers and skills associated with dramatic arts (theater, dramatic media)
- identify and apply criteria for evaluating dramatic works (e.g., skill of performers, originality, emotional impact, variety, interest, technical requirements: lighting, sound, scenery, costumes)
- demonstrate behavior appropriate for observing the particular context and style of dramatic works being performed; discuss opinions with peers in a supportive and constructive way

Grade 7 Skills and Concepts – Visual Arts
Students will

- be actively involved in selecting media, techniques, subject matter and processes for creating artworks for specific purposes, applying the elements of art and principles of design
- use knowledge of the elements and principles of art and art terminology to:
  - create expressive artworks
  - describe and critique their own work creations and the creations of others
- identify and apply criteria for evaluating visual (e.g., skill of artist, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of the artwork being viewed; discuss opinions with peers in a supportive and constructive way
- describe personal responses to artwork; explain why there might be different responses to specific works of art (e.g., personal experience, interest, medium used, effectiveness of message)

Big Idea: Interrelationships Among the Arts

The arts share commonalities in structures, purposes, creative processes, and their ability to express ideals, feelings and emotions. Studying interrelationships among the arts enables students to get a broad view of the expressiveness of the art forms as a whole, and helps to develop a full appreciation of the arts as a mirror of human kind.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.
2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- the arts are basic forms of human communication.
- music, dance, drama, and visual art created in common cultures and/or common historical periods tend to reflect common attitudes, ideas, beliefs and feelings.
- the arts provide forms of non-verbal communication that can strengthen the presentation of ideas and emotions.
- the modes of thinking and methods of the arts disciplines can be used to illuminate situations in other disciplines that require creative solutions.

Grade 7 Skills and Concepts – Arts

Students will

- recognize and discuss common terms and concepts used in various arts (e.g., tempo in dance and music)
- identify communication of common themes or ideas across different art forms
- identify and explain connections between and among different art forms from the same culture or from the same time period
- describe commonalities between the arts and other subjects taught in the school (e.g., observation skills in visual arts and science, historical and cultural perspectives in the arts and social studies, shape in visual art and mathematics, dance and a healthy lifestyle, fractions in music notation and mathematics, composing music and writing)
- communicate common meaning through creating and performing in the four art forms

Kentucky Core Academic Standards – Arts and Humanities – Eighth Grade

The arts and humanities program in the eighth grade centers on establishing grounding in the arts so that students are able to communicate at a basic level in each of the art forms of dance, drama/theatre, music and visual arts. Emphasis should be placed on exposing students to a variety of arts through active experiences in all four art forms. Students may have already begun to, or at this level choose to focus on one art form for more in-depth study. This will help students to prepare should they choose specialization in one art form at the high school level. Grounding in the arts involves literacy development in the four arts content areas, analysis and critique of the arts, and active creating and performing in the arts.

Students should have the opportunity to learn about the arts in the context of creating and performing. As students create and perform, they learn that the arts are basic to human communication and that they can use the arts to communicate specific meaning through their choices in the use of various arts elements and principles of design.

The arts and humanities content standards at the eighth grade level are directly aligned with Kentucky's broad standards called the **Academic Expectations**. The **Academic Expectations** are directly related to the *National Standards for Arts Education (1994)*.

Arts and humanities grade level content standards are organized around five “Big Ideas” that are important to the arts disciplines. The five big ideas in arts and humanities are: Structures in the Arts, Humanity in the Arts, Purposes for Creating the Arts, Processes in the Arts and Interrelationships Among the Arts. The Big Ideas are conceptual organizers for arts and humanities and are similar at each grade level to ensure students have multiple opportunities throughout their school careers to develop skills and concepts linked to each Big Idea.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of the arts and humanities. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for arts and humanities are fundamental to arts literacy and proficiency, and build on prior learning.

The three arts processes of creating, performing and responding to the arts provide a basis for deep understanding and appreciation of the arts. In the processes of creating and performing, a variety of technologies are employed, ranging from primitive technologies to cutting edge electronic and digital technologies.

Creating involves planning and creating new music, dance, drama/theatre or visual arts, or it may involve improvising in music, dance or drama/theatre. Improvising is the composing of new music, reciting/acting new dramatic material, or creating new dance movements on the spur of the moment.

Performing is limited to the performing arts of music, dance and drama/theatre. Performing involves presenting previously created works for an audience. Although the process of

performing involves following a creative plan conceived by a composer, playwright or choreographer, there is still opportunity for creative interpretations in the performance.

Responding to the arts involves responses on multiple levels. The arts are a tool for communication and are capable of delivering meaning through literal and emotional content. Responding to the emotional content of artworks involves actually feeling the emotion(s) set forth by the creator. Responding can also involve intellectual analysis of works of art in regard to their design, effectiveness and quality.

Academic Expectations 2.25 and 2.26 bring forward the study of the humanities aspects of the arts. The arts reflect time, place, and society and offer a mirror to the human experience. The powerful communication qualities of the arts also enable them to be a factor that can drive the human experience. Study of historical and cultural contests in the arts is an essential and integral part of instruction across all the art forms and across all grade levels.

In the eighth grade, social studies content is focused on United States history, early inhabitants to reconstruction. Arts of that time period in American history will be explored. Students will study the arts of the United States from early inhabitants to Reconstruction after the Civil War. Again, European, African, and Native American influences on American arts will be revisited as well as American innovations and styles, and the influence of technology on the arts developed during this period in United States history.

Big Idea: Structure in the Arts

Understanding of the various structural components of the arts is critical to the development of other larger concepts in the arts. Structures that artists use include elements and principles of each art form, tools, media and subject matter that impact artistic products and specific styles and genre that provide a context for creating works. It is the artist's choice of these structural components in the creative process that results in a distinctively expressive work. Students make choices about how to use structural organizers to create meaningful works of their own. The more students understand, the greater their ability to produce, interpret or critique artworks from other artists, cultures and historical periods.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.23 Students analyze their own and others' artistic products and performances using accepted standards.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- the elements of music, dance and drama are intentionally applied in creating and performing.
- the elements and principles of design of visual art are intentionally applied in creating works of art.
- responding to or critiquing works of art involves an understanding of elements, principles, and structures appropriate to each area of the arts.
- existing and emerging technologies can inspire new applications of structural components.

Grade 8 Skills and Concepts – Music

Students will

- use appropriate terminology to identify and analyze the use of elements in a variety of music (rhythm, tempo, melody, harmony, form, timbre, dynamics)
- use the elements of music while performing, singing, playing instruments, moving, listening, reading music, writing music and creating music independently and with others
- listen to and explore how changing different elements results in different musical effects
- recognize, describe and compare various styles of music (gospel, Broadway musicals, blues, popular, marches, ballads)
- identify and describe instruments according to classifications (family, voices, folk and orchestral instruments)

Grade 8 Skills and Concepts – Dance

Students will

- use appropriate terminology to identify and analyze the use of elements in a variety of dance (space, time, force)
- observe, describe and demonstrate choreographic forms in dance
- apply elements of dance and principles of movement (e.g., balance, initiation of movement, weight shift) when observing, creating and performing patterns of movement independently and with others
- identify and describe themes and styles (including characteristics of styles) of dance

Big Idea: Structure in the Arts – Continued

Grade 8 Skills and Concepts – Drama/Theatre
Students will

- use appropriate terminology to identify and analyze the use of elements of drama (literary, technical, performance) in a variety of dramatic works
- use the elements of drama in creating and performing dramatic works independently and with others
- observe, describe and apply creative dramatics (improvisation, mimicry, pantomime, role playing and story telling) in a variety of situations
- identify and describe how technical elements (staging, scenery, props, costumes, make-up, lighting, sound) and performance elements (acting, speaking, nonverbal expression) create mood and believable characters
- describe and compare types of stages (arena, thrust, proscenium)
- explore a variety of dramatic works (e.g., theater and dramatic media – film, television, electronic media)

Grade 8 Skills and Concepts – Visual Arts
Students will

- use appropriate terminology to describe and analyze the use of elements of art (line, shape, form, texture, color) and principles of design (emphasis, pattern, balance, contrast) in a variety of visual artworks
- use the elements of art, principles of design and a variety of processes in creating artworks
- apply organizational structures and describe what makes them effective or not effective in communicating ideas
- identify and analyze the use of elements of art (e.g., line, shape, color properties, color schemes/groups, form, texture, space, value) and principles of design (e.g., repetition, emphasis, pattern, balance, contrast, rhythm, proportion, movement) in a variety of two and three dimensional artworks
- identify a variety of subject matter in visual artworks (representational – e.g., landscape, portrait, still life, nonrepresentational – e.g., abstract, non-objective)

Big Idea: Humanity in the Arts

The arts reflect the beliefs, feelings and ideals of those who create them. Experiencing the arts allows one to experience time, place and/or personality. By experiencing the arts of various cultures, students can actually gain insight into the beliefs, feelings and ideas of those cultures. Students also have the opportunity to experience how the arts can influence society through analysis of arts in their own lives and the arts of other cultures and historical periods. Studying the historical and cultural stylistic periods in the arts offers students an opportunity to understand the world past and present, and to learn to appreciate their own cultural heritage. Looking at the interrelationships of multiple arts disciplines across cultures and historical periods is the focus of humanities in the arts.

Academic Expectations

2.24 Students have knowledge of major works of art, music, and literature and appreciate creativity and the contributions of the arts and humanities.

2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.

2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- the arts are powerful tools for understanding human experiences both past and present.
- the arts help us understand others' (often very different) ways of thinking, working, and expressing ourselves.
- the arts play a major role in the creation and defining of cultures and building civilizations.

Grade 8 Skills and Concepts – Music

Students will

- describe and analyze distinguishing characteristics of music representing a variety of world cultures and time periods (Early American through Civil War)
- listen to, perform and classify music representing a variety of world cultures and historical periods
- examine music from various world cultures and explain how music reflects the culture, cultural beliefs or blending of cultures; use examples to illustrate how music has directly influenced society or culture
- examine music from various time periods and explain how the influence of time and place are reflected in the music (e.g., (African influence in American music)

Grade 8 Skills and Concepts – Dance

Students will

- describe and analyze distinguishing characteristics of dance representing a variety of world cultures and time periods (Early American through Civil War)
- observe, classify and perform dance representing a variety of world cultures and historical periods
- examine dance from various world cultures and explain how dance reflects the culture, cultural beliefs or blending of cultures; use examples to illustrate how dance has directly influenced society or culture
- examine dance from various time periods and explain how the influence of time and place are reflected in the dance

Big Idea: Humanity in the Arts – Continued

Grade 8 Skills and Concepts – Drama/Theatre
Students will

- describe and analyze distinguishing characteristics of dramatic work representing a variety of world cultures and time periods (Early American through Civil War)
- observe, classify and perform dramatic works representing a variety of world cultures and historical periods
- examine dramatic works from various world cultures and explain how dramatic works reflect the culture, cultural beliefs or blending of cultures; use examples to illustrate how dramatic works have directly influenced society or culture
- examine dramatic works from various time periods and explain how the influence of time and place are reflected in them
- use print and non-print sources to explore, describe and compare themes, characters, and situations in dramas and characteristics of theater from different cultures or time periods

Grade 8 Skills and Concepts – Visual Arts
Students will

- describe and analyze distinguishing characteristics of visual art representing a variety of world cultures and time periods (Early American through Civil War)
- observe, classify and create visual art according to styles and processes used in a variety of world cultures and historical periods
- examine visual artworks from various world cultures and explain how artworks reflect the culture, cultural beliefs or blending of cultures; use examples to illustrate how artworks have directly influenced society or culture
- examine visual artworks from various time periods and explain the influence of time and place that are reflected in them (e.g., European Neo-classical influences on architecture)
- use print and non-print sources to explore, describe and compare themes, characters, and situations in artworks from different cultures or time periods

Big Idea: Purposes for Creating the Arts

The arts have played a major role throughout the history of humans. As the result of the power of the arts to communicate on a basic human level, they continue to serve a variety of purposes in society. The arts are used for artistic expression to portray specific emotions or feelings, to tell stories in a narrative manner, to imitate nature and to persuade others. The arts bring meaning to ceremonies, rituals, celebrations and commemorations. Additionally, they are used for recreation and to support recreational activities. Students experience the arts in a variety of roles through their own creations and performances and through those of others. Through their activities and observations, students learn to create arts and use them for a variety of purposes in society.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- the arts fulfill a variety of purposes in society (e.g., to present issues and ideas, to entertain, to teach or persuade, to design, plan and beautify).
- the arts have value and significance for daily life. They provide personal fulfillment, whether in career settings, avocational pursuits, or leisure.
- the arts provide forms of nonverbal communication that can strengthen the presentation of ideas and emotions.

Grade 8 Skills and Concepts – Music

Students will

- compare and explain purposes for which music is created to fulfill (ceremonial, recreational, artistic expression)
- create new, listen to, choose and perform music to fulfill a variety of specific purposes

Grade 8 Skills and Concepts – Dance

Students will

- compare and explain purposes for which dance is created (ceremonial, recreational, artistic expression)
- create new, observe, choose and perform dance to fulfill a variety of specific purposes

Grade 8 Skills and Concepts – Drama/Theatre

Students will

- compare and explain purposes for which drama/theatre is created (sharing the human experience, passing on tradition and culture, recreational, artistic expression)
- create or write new, observe, choose and perform dramatic works to fulfill a variety of specific purposes

Grade 8 Skills and Concepts – Visual Arts

Students will

- compare and explain purposes for which visual art is created (ceremonial, artistic expression, narrative, functional, persuasive)
- create new, choose and experience artworks created to fulfill a variety of specific purposes

Big Idea: Processes in the Arts

There are three distinctive processes involved in the arts. These processes are creating new works, performing works for expressive purposes and responding to artworks. Each process is critical and relies on others for completion. Artists create works to express ideas, feelings or beliefs. The visual arts capture a moment in time while the performing arts (music, dance, drama/theatre) are performed for a live audience. The audience responds to the artistic expressions emotionally and intellectually based on the meaning of the work. Each process enhances understanding, abilities and appreciation of others. Students involved in these processes over time will gain a great appreciation for the arts, for artists past and present, and for the value of artistic expression.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- there are three distinct processes for involvement in the arts; creating new artworks, performing works previously created and responding to artworks and performances.
- full understanding and appreciation of the arts requires some degree of involvement in all three processes.
- openness, respect for work and an understanding of how artists apply elements and principles of design in creating and performing are personal attitudes and skills that enhance enjoyment of the observer.
- existing and emerging technologies can extend the reach of the art form to new audiences.

Grade 8 Skills and Concepts – Music

Students will

- be actively involved in creating, notating, improvising and performing music (e.g., similar style answers to musical phrases, variations on given melodies, demonstrating unity/variety, tension/release, and balance) alone and with others
- use knowledge of musical elements and a variety of sound sources to create and perform music in an expressive manner
- sing or play alone and with others examples of music with increasingly complex melodies and rhythmic patterns in treble and bass clef (with practice)
- use knowledge of the elements of music and music terminology to describe and critique their own performances and the performances of others
- identify and apply criteria for evaluating music (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of music being performed; discuss opinions with peers in a supportive and constructive way

Big Idea: Processes in the Arts – Continued

Grade 8 Skills and Concepts – Dance
Students will

- be actively involved (individually and in small groups) in creating and performing dance (using the elements of dance: space, time and force) in a variety of compositional forms (AB, ABA, call and response, or narrative)
- create an improvisational dance with complex movements (beginning, middle and end)
- use knowledge of dance elements to create and perform dance in an expressive manner
- use knowledge of the elements of dance and dance terminology to describe and critique their own performances and the performances of others
- identify and apply criteria for evaluating dance (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of dance being performed; discuss opinions with peers in a supportive and constructive way

Grade 8 Skills and Concepts – Drama/Theatre
Students will

- be actively involved in creating, improvising and performing dramatic works alone and with others, using elements of drama (Literary, Technical, Performance)
- use knowledge of elements of drama to:
  - create and perform dramatic works in an expressive manner
  - describe and critique their own performances and the performances of others
- use a variety of resources (e.g., research, peers, technology) to:
  - write, refine, and record dialogue, monologues, and action
  - explore jobs/careers (e.g., playwright, director, actor) and skills associated with dramatic arts (theater, dramatic media)
- identify and apply criteria for evaluating dramatic works (e.g., skill of performers, originality, emotional impact, variety, interest, technical requirements: lighting, sound, scenery, costumes, make-up)
- demonstrate behavior appropriate for observing the particular context and style of dramatic works being performed; discuss opinions with peers in a supportive and constructive way

Grade 8 Skills and Concepts – Visual Arts
Students will

- be actively involved in selecting media, techniques, subject matter and processes for creating artworks for specific purposes, applying the elements of art and principles of design
- use knowledge of the elements and principles of art and art terminology to:
  - create expressive artworks
  - describe and critique their own work creations and the creations of others
- identify and apply criteria for evaluating visual (e.g., skill of artist, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of the artwork being viewed; discuss opinions with peers in a supportive and constructive way
- describe personal responses to artwork; explain why there might be different responses to specific works of art (e.g., personal experience, interest, medium used, effectiveness of message)

Big Idea: Interrelationships Among the Arts

The arts share commonalities in structures, purposes, creative processes, and their ability to express ideals, feelings and emotions. Studying interrelationships among the arts enables students to get a broad view of the expressiveness of the art forms as a whole, and helps to develop a full appreciation of the arts as a mirror of human kind.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.
2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- the arts are basic forms of human communication.
- music, dance, drama and visual art created in common cultures and/or common historical periods tend to reflect common attitudes, ideas, beliefs and feelings.
- the arts provide forms of non-verbal communication that can strengthen the presentation of ideas and emotions.
- the modes of thinking and methods of the arts disciplines can be used to illuminate situations in other disciplines that require creative solutions.

Grade 8 Skills and Concepts – Arts

Students will

- recognize and discuss common terms and concepts used in various arts (e.g., tempo in dance and music)
- identify communication of common themes or ideas across different art forms
- identify and explain connections between and among different art forms from the same culture or from the same time period
- describe commonalities between the arts and other subjects taught in the school (e.g., observation skills in visual arts and science, historical and cultural perspectives in the arts and social studies, shape in visual art and mathematics, dance and a healthy lifestyle, fractions in music notation and mathematics, composing music and writing)
- communicate common meaning through creating and performing in the four art forms

MIDDLE LEVEL ENGLISH LANGUAGE ARTS

STANDARDS FOR
English Language Arts
6-8

Kentucky Core Academic Standards

The standards are organized around the follow features:

- **Reading and Literature:** Text complexity and the growth of comprehension
- **Writing and Research**: Text types, grade-level focuses, and research
- **Speaking and Listening**: Flexible communication
- **Language Development**: Conventions and vocabulary

Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, and Language

The descriptions that follow are not standards themselves but instead offer a portrait of students who meet the standards set out in this document. As students advance through the grades and master the standards in reading, writing, speaking, listening, and language, they are able to exhibit with increasing fullness and regularity these capacities of the literate individual.

They demonstrate independence.

Students can, without significant scaffolding, comprehend and evaluate complex texts across a range of types and disciplines, and they can construct effective arguments and convey intricate or multifaceted information. Likewise, students are able independently to discern a speaker's key points, request clarification, and ask relevant questions. They build on others' ideas, articulate their own ideas, and confirm they have been understood. Without prompting, they demonstrate command of standard English and acquire and use a wide-ranging vocabulary. More broadly, they become self-directed learners, effectively seeking out and using resources to assist them, including teachers, peers, and print and digital reference materials.

They build strong content knowledge.

Students establish a base of knowledge across a wide range of subject matter by engaging with works of quality and substance. They become proficient in new areas through research and study. They read purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. They refine and share their knowledge through writing and speaking.

They respond to the varying demands of audience, task, purpose, and discipline.

Students adapt their communication in relation to audience, task, purpose, and discipline. They set and adjust purpose for reading, writing, speaking, listening, and language use as warranted by the task. They appreciate nuances, such as how the composition of an audience should affect tone when speaking and how the connotations of words affect meaning. They also know that different disciplines call for different types of evidence (e.g., documentary evidence in history, experimental evidence in science).

They comprehend as well as critique.

Students are engaged and open-minded—but discerning—readers and listeners. They work diligently to understand precisely what an author or speaker is saying, but they also question an author's or speaker's assumptions and premises and assess the veracity of claims and the soundness of reasoning.

They value evidence.

Students cite specific evidence when offering an oral or written interpretation of a text. They use relevant evidence when supporting their own points in writing and speaking, making their reasoning clear to the reader or listener, and they constructively evaluate others' use of evidence.

They use technology and digital media strategically and capably.

Students employ technology thoughtfully to enhance their reading, writing, speaking, listening, and language use. They tailor their searches online to acquire useful information efficiently, and they integrate what they learn using technology with what they learn offline. They are familiar with the strengths and limitations of various technological tools and mediums and can select and use those best suited to their communication goals.

They come to understand other perspectives and cultures.

Students appreciate that the twenty-first-century classroom and workplace are settings in which people from often widely divergent cultures and who represent diverse experiences and perspectives must learn and work together. Students actively seek to understand other perspectives and cultures through reading and listening, and they are able to communicate effectively with people of varied backgrounds. They evaluate other points of view critically and constructively. Through reading great classic and contemporary works of literature representative of a variety of periods, cultures, and worldviews, students can vicariously inhabit worlds and have experiences much different than their own.

How to read this document

Overall Document Organization

The Standards comprise three main sections: a comprehensive K–5 section and two content area–specific sections for grades 6–12, one for ELA and one for history/social studies, science, and technical subjects. Three appendices accompany the main document.

Each section is divided into strands. K–5 and 6–12 ELA have Reading, Writing, Speaking and Listening, and Language strands; the 6–12 history/ social studies, science, and technical subjects section focuses on Reading and Writing. Each strand is headed by a strand-specific set of College and Career Readiness Anchor Standards that is identical across all grades and content areas.

Standards for each grade within K–8 and for grades 9–10 and 11–12 follow the CCR anchor standards in each strand. Each grade-specific standard (as these standards are collectively referred to) corresponds to the same-numbered CCR anchor standard. Put another way, each CCR anchor standard has an accompanying grade-specific standard translating the broader CCR statement into grade-appropriate end-of-year expectations.

Individual CCR anchor standards can be identified by their strand, CCR status, and number (R.CCR.6, for example). Individual grade-specific standards can be identified by their strand, grade, and number (or number and letter, where applicable), so that RI.4.3, for example, stands for Reading, Informational Text, grade 4, standard 3 and W.5.1a stands for Writing, grade 5, standard 1a. Strand designations can be found in brackets alongside the full strand title.

Who is responsible for which portion of the Standards

A single K–5 section lists standards for reading, writing, speaking, listening, and language across the curriculum, reflecting the fact that most or all of the instruction students in these grades receive comes from one teacher. Grades 6–12 are covered in two content area–specific sections, the first for the English language arts teacher and the second for teachers of history/social studies, science, and technical subjects. Each section uses the same CCR anchor standards but also includes grade-specific standards tuned to the literacy requirements of the particular discipline(s).

Key features of the Standards

Reading: Text complexity and the growth of comprehension

The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by grade “staircase” of increasing text complexity that rises from beginning reading to the college and career readiness level. Whatever they are reading, students must also show a steadily growing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.

Writing: text types, responding to reading, and research

The Standards acknowledge the fact that whereas some writing skills, such as the ability to plan, revise, edit, and publish, are applicable to many types of writing, other skills are more properly defined in terms of specific writing types: arguments, informative/explanatory texts, and narratives. Standard 9 stresses the importance of the writing-reading connection by requiring students to draw and write about evidence from literary and informational texts. Because of the centrality of writing to most forms of inquiry, research standards are prominently included in this strand, though skills important to research are infused throughout the document.

Speaking and Listening: flexible communication and collaboration

Including but not limited to skills necessary for formal presentations, the Speaking and Listening standards require students to develop a range of broadly useful oral communication and interpersonal skills. Students must learn to work together, express and listen carefully to ideas, integrate information from oral, visual, quantitative, and media sources, evaluate what they hear, use media and visual displays strategically to help achieve communicative purposes, and adapt speech to context and task.

Language: Conventions, effective use, and vocabulary

The Language standards include the essential “rules” of standard written and spoken English, but they also approach language as a matter of craft and informed choice among alternatives. The vocabulary standards focus on understanding words and phrases, their relationships, and their nuances and on acquiring new vocabulary, particularly general academic and domain-specific words and phrases.

Appendices A, B, and C

Appendix A contains supplementary material on reading, writing, speaking and listening, and language as well as a glossary of key terms. Appendix B consists of text exemplars illustrating the complexity, quality, and range of reading appropriate for various grade levels with accompanying sample performance tasks. Appendix C includes annotated samples demonstrating at least adequate performance in student writing at various grade levels.

College and Career Readiness Anchor Standards for Reading

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Key Ideas and Details

1 Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2 Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3 Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Craft and Structure

4 Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5 Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6 Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7 Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.*
8 Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9 Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10 Read and comprehend complex literary and informational texts independently and proficiently.

Note on range and content of student reading

To become college and career ready, students must grapple with works of exceptional craft and thought whose range extends across genres, cultures, and centuries. Such works offer profound insights into the human condition and serve as models for students' own thinking and writing. Along with high-quality contemporary works, these texts should be chosen from among seminal U.S. documents, the classics of American literature, and the timeless dramas of Shakespeare. Through wide and deep reading of literature and literary nonfiction of steadily increasing sophistication, students gain a reservoir of literary and cultural knowledge, references, and images; the ability to evaluate intricate arguments; and the capacity to surmount the challenges posed by complex texts.

* Please see "Research to Build Knowledge" in Writing and "Comprehension and Collaboration" in Speaking and Listening for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

Reading Standards for Literature 6–12

RL

The following standards offer a focus for instruction each year and help ensure that students gain adequate exposure to a range of texts and tasks. Rigor is also infused through the requirement that students read increasingly complex texts through the grades. *Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.*

Grade 6 students:	Grade 7 students:	Grade 8 students:
Key Ideas and Details		
1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	1. Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	1. Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
2. Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.	2. Determine a theme or central idea of a text and analyze its development over the course of the text; provide an objective summary of the text.	2. Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.
3. Describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.	3. Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).	3. Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.	4. Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.	4. Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.
5. Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.	5. Analyze how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning.	5. Compare and contrast the structure of two or more texts and analyze how the differing structure of each text contributes to its meaning and style.
6. Explain how an author develops the point of view of the narrator or speaker in a text.	6. Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.	6. Analyze how differences in the points of view of the characters and the audience or reader (e.g., created through the use of dramatic irony) create such effects as suspense or humor.

Reading Standards for Literature 6–12

Grade 6 students:	Grade 7 students:	Grade 8 students:
Integration of Knowledge and Ideas		
7. Compare and contrast the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text, including contrasting what they "see" and "hear" when reading the text to what they perceive when they listen or watch.	7. Compare and contrast a written story, drama, or poem to its audio, filmed, staged, or multimedia version, analyzing the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).	7. Analyze the extent to which a filmed or live production of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors.
8. (Not applicable to literature)	8. (Not applicable to literature)	8. (Not applicable to literature)
9. Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.	9. Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.	9. Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new.
Range of Reading and Level of Text Complexity		
10. By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	10. By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	10. By the end of the year, read and comprehend literature, including stories, dramas, and poems, at the high end of grades 6–8 text complexity band independently and proficiently.

Reading Standards for Informational Text 6–12

Grade 6 students:	Grade 7 students:	Grade 8 students:
Key Ideas and Details		
1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	1. Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	1. Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
2. Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.	2. Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.	2. Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.
3. Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).	3. Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).	3. Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.	4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.	4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.
5. Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.	5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to the development of the ideas.	5. Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.
6. Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.	6. Determine an author's point of view or purpose in a text and analyze how the author distinguishes his or her position from that of others.	6. Determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.
Integration of Knowledge and Ideas		
7. Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.	7. Compare and contrast a text to an audio, video, or multimedia version of the text, analyzing each medium's portrayal of the subject (e.g., how the delivery of a speech affects the impact of the words).	7. Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.
8. Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.	8. Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.	8. Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.
9. Compare and contrast one author's presentation of events with that of another (e.g., a memoir written by and a biography on the same person).	9. Analyze how two or more authors writing about the same topic shape their presentations of key information by emphasizing different evidence or advancing different interpretations of facts.	9. Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.
Range of Reading and Level of Text Complexity		
10. By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	10. By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	10. By the end of the year, read and comprehend literary nonfiction at the high end of the grades 6–8 text complexity band independently and proficiently.

College and Career Readiness Anchor Standards for Writing

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes*

1 Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2 Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3 Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Production and Distribution of Writing

4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6 Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7 Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8 Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

*These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.

Note on range and content of student writing

For students, writing is a key means of asserting and defending claims, showing what they know about a subject, and conveying what they have experienced, imagined, thought, and felt. To be college- and career-ready writers, students must take task, purpose, and audience into careful consideration, choosing words, information, structures, and formats deliberately. They need to know how to combine elements of different kinds of writing—for example, to use narrative strategies within argument and explanation within narrative— to produce complex and nuanced writing. They need to be able to use technology strategically when creating, refining, and collaborating on writing. They have to become adept at gathering information, evaluating sources, and citing material accurately, reporting findings from their research and analysis of sources in a clear and cogent manner. They must have the flexibility, concentration, and fluency to produce high-quality first-draft text under a tight deadline as well as the capacity to revisit and make improvements to a piece of writing over multiple drafts when circumstances encourage or require it.

Writing Standards 6–12

The following standards for grades 6–12 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Each year in their writing, students should demonstrate increasing sophistication in all aspects of language use, from vocabulary and syntax to the development and organization of ideas, and they should address increasingly demanding content and sources. *Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.* The expected growth in student writing ability is reflected both in the standards themselves and in the collection of annotated student writing samples in Appendix C.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Text Types and Purposes		
1. Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s) and organize the reasons and evidence clearly. b. Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from the argument presented.	1. Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from and supports the argument presented.	1. Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from and supports the argument presented.
2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate transitions to clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from the information or explanation presented.	2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.	2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.

Writing Standards 6–12

Grade 6 students:	Grade 7 students:	Grade 8 students:
Text Types and Purposes (continued)		
3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. a. Engage and orient the reader by establishing a context and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another. d. Use precise words and phrases, relevant descriptive details, and sensory language to convey experiences and events. e. Provide a conclusion that follows from the narrated experiences or events.	3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another. d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. e. Provide a conclusion that follows from and reflects on the narrated experiences or events.	3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, description, and reflection, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence, signal shifts from one time frame or setting to another, and show the relationships among experiences and events. d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. e. Provide a conclusion that follows from and reflects on the narrated experiences or events.
Production and Distribution of Writing		
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 6 on page 52.)	5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 7 on page 52.)	5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 8 on page 52.)
6. Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.	6. Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.	6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas efficiently as well as to interact and collaborate with others.

Writing Standards 6–12

Grade 6 students:	Grade 7 students:	Grade 8 students:
Research to Build and Present Knowledge		
7. Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.	7. Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.	7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
8. Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.	8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply grade 6 Reading standards to literature (e.g., "Compare and contrast texts in different forms or genres [e.g., stories and poems; historical novels and fantasy stories] in terms of their approaches to similar themes and topics"). b. Apply grade 6 Reading standards to literary nonfiction (e.g., "Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not").	9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply grade 7 Reading standards to literature (e.g., "Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history"). b. Apply grade 7 Reading standards to literary nonfiction (e.g. "Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims").	9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply grade 8 Reading standards to literature (e.g., "Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new"). b. Apply grade 8 Reading standards to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced").
Range of Writing		
10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

College and Career Readiness Anchor Standards for Speaking and Listening

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Comprehension and Collaboration

1 Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
2 Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
3 Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

Presentation of Knowledge and Ideas

4 Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.
5 Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
6 Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

Note on range and content of student speaking and listening

To become college and career ready, students must have ample opportunities to take part in a variety of rich, structured conversations—as part of a whole class, in small groups, and with a partner—built around important content in various domains. They must be able to contribute appropriately to these conversations, to make comparisons and contrasts, and to analyze and synthesize a multitude of ideas in accordance with the standards of evidence appropriate to a particular discipline. Whatever their intended major or profession, high school graduates will depend heavily on their ability to listen attentively to others so that they are able to build on others' meritorious ideas while expressing their own clearly and persuasively.

New technologies have broadened and expanded the role that speaking and listening play in acquiring and sharing knowledge and have tightened their link to other forms of communication. The Internet has accelerated the speed at which connections between speaking, listening, reading, and writing can be made, requiring that students be ready to use these modalities nearly simultaneously. Technology itself is changing quickly, creating a new urgency for students to be adaptable in response to change.

Speaking and Listening Standards 6–12

The following standards for grades 6–12 offer a focus for instruction in each year to help ensure that students gain adequate mastery of a range of skills and applications. *Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.*

Grade 6 students:	Grade 7 students:	Grade 8 students:
Comprehension and Collaboration		
1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 6 topics, texts, and issues*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion. b. Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed. c. Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion. d. Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.	1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 7 topics, texts, and issues*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion. b. Follow rules for collegial discussions, track progress toward specific goals and deadlines, and define individual roles as needed. c. Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed. d. Acknowledge new information expressed by others and, when warranted, modify their own views.	1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 8 topics, texts, and issues*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion. b. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed. c. Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas. d. Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.
2. Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.	2. Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.	2. Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.
3. Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.	3. Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence.	3. Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and relevance and sufficiency of the evidence and identifying when irrelevant evidence is introduced.
Presentation of Knowledge and Ideas		
4. Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.	4. Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.	4. Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.
5. Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.	5. Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.	5. Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.
6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 6 Language standards 1 and 3 on page 52 for specific expectations.)	6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 7 Language standards 1 and 3 on page 52 for specific expectations.)	6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 8 Language standards 1 and 3 on page 52 for specific expectations.)

College and Career Readiness Anchor Standards for Language

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Conventions of Standard English

1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

Knowledge of Language

3 Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

Vocabulary acquisition and Use

4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
5 Demonstrate understanding of word relationships and nuances in word meanings.
6 Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Note on range and content of student language use

To be college and career ready in language, students must have firm control over the conventions of standard English. At the same time, they must come to appreciate that language is as at least as much a matter of craft as of rules and be able to choose words, syntax, and punctuation to express themselves and achieve particular functions and rhetorical effects. They must also have extensive vocabularies, built through reading and study, enabling them to comprehend complex texts and engage in purposeful writing about and conversations around content. They need to become skilled in determining or clarifying the meaning of words and phrases they encounter, choosing flexibly from an array of strategies to aid them. They must learn to see an individual word as part of a network of other words—words, for example, that have similar denotations but different connotations. The inclusion of Language standards in their own strand should not be taken as an indication that skills related to conventions, effective language use, and vocabulary are unimportant to reading, writing, speaking, and listening; indeed, they are inseparable from such contexts.

Language Standards 6–12

The following standards for grades 6–12 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. *Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.* Beginning in grade 3, skills and understandings that are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking are marked with an asterisk (*). See the table on page 56 for a complete listing and Appendix A for an example of how these skills develop in sophistication.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Conventions of Standard English		
1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Ensure that pronouns are in the proper case (subjective, objective, possessive). b. Use intensive pronouns (e.g., *myself, ourselves*). c. Recognize and correct inappropriate shifts in pronoun number and person.* d. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).* e. Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.*	1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Explain the function of phrases and clauses in general and their function in specific sentences. b. Choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas. c. Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.*	1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences. b. Form and use verbs in the active and passive voice. c. Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood. d. Recognize and correct inappropriate shifts in verb voice and mood.*
2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.* b. Spell correctly.	2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Use a comma to separate coordinate adjectives (e.g., *It was a fascinating, enjoyable movie* but not *He wore an old[,] green shirt*). b. Spell correctly.	2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Use punctuation (comma, ellipsis, dash) to indicate a pause or break. b. Use an ellipsis to indicate an omission. c. Spell correctly.
Knowledge of Language		
3. Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Vary sentence patterns for meaning, reader/listener interest, and style.* b. Maintain consistency in style and tone.*	3. Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.*	3. Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Use verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the action; expressing uncertainty or describing a state contrary to fact).

Language Standards 6–12

Grade 6 students:	Grade 7 students:	Grade 8 students:
Vocabulary Acquisition and Use		
4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 6 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., *audience, auditory, audible*). c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 7 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., *belligerent, bellicose, rebel*). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	4. Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on *grade 8 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., *precede, recede, secede*). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., personification) in context. b. Use the relationship between particular words (e.g., cause/effect, part/whole, item/category) to better understand each of the words. c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., *stingy, scrimping, economical, unwasteful, thrifty*).	5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., literary, biblical, and mythological allusions) in context. b. Use the relationship between particular words (e.g., synonym/antonym, analogy) to better understand each of the words. c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., *refined, respectful, polite, diplomatic, condescending*).	5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g. verbal irony, puns) in context. b. Use the relationship between particular words to better understand each of the words. c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., *bullheaded, willful, firm, persistent, resolute*).
6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.	6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.	6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Language Progressive Skills, by Grade

The following skills, marked with an asterisk (*) in Language standards 1–3, are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking.

Standard	Grade(s)							
	3	4	5	6	7	8	9–10	11–12
L.3.1f. Ensure subject-verb and pronoun-antecedent agreement.								
L.3.3a. Choose words and phrases for effect.								
L.4.1f. Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.								
L.4.1g. Correctly use frequently confused words (e.g., *to/too/two; there/their*).								
L.4.3a. Choose words and phrases to convey ideas precisely.*								
L.4.3b. Choose punctuation for effect.								
L.5.1d. Recognize and correct inappropriate shifts in verb tense.								
L.5.2a. Use punctuation to separate items in a series.†								
L.6.1c. Recognize and correct inappropriate shifts in pronoun number and person.								
L.6.1d. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).								
L.6.1e. Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.								
L.6.2a. Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.								
L.6.3a. Vary sentence patterns for meaning, reader/listener interest, and style.‡								
L.6.3b. Maintain consistency in style and tone.								
L.7.1c. Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.								
L.7.3a. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.								
L.8.1d. Recognize and correct inappropriate shifts in verb voice and mood.								
L.9–10.1a. Use parallel structure.								

* Subsumed by L.7.3a
† Subsumed by L.9–10.1a
‡ Subsumed by L.11–12.3a

Standard 10: Range, Quality, and Complexity of Student Reading 6–12

Measuring Text Complexity: Three Factors

Qualitative evaluation of the text:	Levels of meaning, structure, language conventionality and clarity, and knowledge demands
Quantitative evaluation of the text:	Readability measures and other scores of text complexity
Matching reader to text and task:	Reader variables (such as motivation, knowledge, and experiences) and task variables (such as purpose and the complexity generated by the task assigned and the questions posed)

Note: More detailed information on text complexity and how it is measured is contained in Appendix A.

Range of Text Types for 6–12

Students in grades 6–12 apply the Reading standards to the following range of text types, with texts selected from a broad range of cultures and periods.

	Literature		Informational Text
Stories	drama	Poetry	Literary nonfiction
Includes the subgenres of adventure stories, historical fiction, mysteries, myths, science fiction, realistic fiction, allegories, parodies, satire, and graphic novels	Includes one-act and multi-act plays, both in written form and on film	Includes the subgenres of narrative poems, lyrical poems, free verse poems, sonnets, odes, ballads, and epics	Includes the subgenres of exposition, argument, and functional text in the form of personal essays, speeches, opinion pieces, essays about art or literature, biographies, memoirs, journalism, and historical, scientific, technical, or economic accounts (including digital sources) written for a broad audience

Texts Illustrating the Complexity, Quality, and Range of Student Reading 6–12

	Literature: Stories, Dramas, Poetry	Informational Texts: Literary Nonfiction
6–8	▪ *Little Women* by Louisa May Alcott (1869) ▪ *The Adventures of Tom Sawyer* by Mark Twain (1876) ▪ "The Road Not Taken" by Robert Frost (1915) ▪ *The Dark Is Rising* by Susan Cooper (1973) ▪ *Dragonwings* by Laurence Yep (1975) ▪ *Roll of Thunder, Hear My Cry* by Mildred Taylor (1976)	▪ "Letter on Thomas Jefferson" by John Adams (1776) ▪ *Narrative of the Life of Frederick Douglass, an American Slave* by Frederick Douglass (1845) ▪ "Blood, Toil, Tears and Sweat: Address to Parliament on May 13th, 1940" by Winston Churchill (1940) ▪ *Harriet Tubman: Conductor on the Underground Railroad* by Ann Petry (1955) ▪ *Travels with Charley: In Search of America* by John Steinbeck (1962)
9–10	▪ *The Tragedy of Macbeth* by William Shakespeare (1592) ▪ "Ozymandias" by Percy Bysshe Shelley (1817) ▪ "The Raven" by Edgar Allen Poe (1845) ▪ "The Gift of the Magi" by O. Henry (1906) ▪ *The Grapes of Wrath* by John Steinbeck (1939) ▪ *Fahrenheit 451* by Ray Bradbury (1953) ▪ *The Killer Angels* by Michael Shaara (1975)	▪ "Speech to the Second Virginia Convention" by Patrick Henry (1775) ▪ "Farewell Address" by George Washington (1796) ▪ "Gettysburg Address" by Abraham Lincoln (1863) ▪ "State of the Union Address" by Franklin Delano Roosevelt (1941) ▪ "Letter from Birmingham Jail" by Martin Luther King, Jr. (1964) ▪ "Hope, Despair and Memory" by Elie Wiesel (1997)
11–CCR	▪ "Ode on a Grecian Urn" by John Keats (1820) ▪ *Jane Eyre* by Charlotte Brontë (1848) ▪ "Because I Could Not Stop for Death" by Emily Dickinson (1890) ▪ *The Great Gatsby* by F. Scott Fitzgerald (1925) ▪ *Their Eyes Were Watching God* by Zora Neale Hurston (1937) ▪ *A Raisin in the Sun* by Lorraine Hansberry (1959) ▪ *The Namesake* by Jhumpa Lahiri (2003)	▪ *Common Sense* by Thomas Paine (1776) ▪ *Walden* by Henry David Thoreau (1854) ▪ "Society and Solitude" by Ralph Waldo Emerson (1857) ▪ "The Fallacy of Success" by G. K. Chesterton (1909) ▪ *Black Boy* by Richard Wright (1945) ▪ "Politics and the English Language" by George Orwell (1946) ▪ "Take the Tortillas Out of Your Poetry" by Rudolfo Anaya (1995)

Note: Given space limitations, the illustrative texts listed above are meant only to show individual titles that are representative of a range of topics and genres. (See Appendix B for excerpts of these and other texts illustrative of grades 6–12 text complexity, quality, and range.) At a curricular or instructional level, within and across grade levels, texts need to be selected around topics or themes that generate knowledge and allow students to study those topics or themes in depth.

STANDARDS FOR

Literacy in History/Social Studies, Science, and Technical Subjects

6–8

College and Career Readiness Anchor Standards for Reading

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade span. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Key Ideas and Details

1 Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2 Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3 Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

Craft and Structure

4 Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5 Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6 Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7 Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.*
8 Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9 Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10 Read and comprehend complex literary and informational texts independently and proficiently.

*Please see “Research to Build and Present Knowledge” in Writing for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

Note on range and content of student reading

Reading is critical to building knowledge in history/social studies as well as in science and technical subjects. College and career ready reading in these fields requires an appreciation of the norms and conventions of each discipline, such as the kinds of evidence used in history and science; an understanding of domain-specific words and phrases; an attention to precise details; and the capacity to evaluate intricate arguments, synthesize complex information, and follow detailed descriptions of events and concepts. In history/social studies, for example, students need to be able to analyze, evaluate, and differentiate primary and secondary sources. When reading scientific and technical texts, students need to be able to gain knowledge from challenging texts that often make extensive use of elaborate diagrams and data to convey information and illustrate concepts. Students must be able to read complex informational texts in these fields with independence and confidence because the vast majority of reading in college and workforce training programs will be sophisticated nonfiction. It is important to note that these Reading standards are meant to complement the specific content demands of the disciplines, not replace them.

Reading Standards for Literacy in History/Social Studies 6–12

The standards below begin at grade 6; standards for K–5 reading in history/social studies, science, and technical subjects are integrated into the K–5 Reading standards. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

RH

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of primary and secondary sources.	1. Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.	1. Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.
2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.	2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.	2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.
3. Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).	3. Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.	3. Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.	4. Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.	Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10).
5. Describe how a text presents information (e.g., sequentially, comparatively, causally).	5. Analyze how a text uses structure to emphasize key points or advance an explanation or analysis	5. Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.
6. Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).	6. Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.	6. Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence.
Integration of Knowledge and Ideas		
7. Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.	7. Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.	7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.
8. Distinguish among fact, opinion, and reasoned judgment in a text.	8. Assess the extent to which the reasoning and evidence in a text support the author's claims.	8. Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other information.
9. Analyze the relationship between a primary and secondary source on the same topic.	9. Compare and contrast treatments of the same topic in several primary and secondary sources.	9. Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.
Range of Reading and Level of Text Complexity		
10. By the end of grade 8, read and comprehend history/social studies texts in the grades 6–8 text complexity band independently and proficiently.	10. By the end of grade 10, read and comprehend history/social studies texts in the grades 9–10 text complexity band independently and proficiently.	10. By the end of grade 12, read and comprehend history/social studies texts in the grades 11–12 text complexity band independently and proficiently.

RST

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of science and technical texts.	1. Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.	1. Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.	2. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.	2. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text.	3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
Craft and Structure		
4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics.*	4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 9–10 texts and topics*.	4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 11–12 texts and topics*.
5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.	5. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., *force, friction, reaction force, energy*).	5. Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.	6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
Integration of Knowledge and Ideas		
7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).	7. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.	7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	8. Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.	8. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
9. Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	9. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.	9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
Range of Reading and Level of Text Complexity		
10. By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.	10. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.	10. By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently and proficiently.

College and Career Readiness Anchor Standards for Writing

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade span. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes*

1 Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
2 Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3 Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences.

Production and Distribution of Writing

4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6 Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7 Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8 Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

*These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.

Note on range and content of student writing

For students, writing is a key means of asserting and defending claims, showing what they know about a subject, and conveying what they have experienced, imagined, thought, and felt. To be college and career ready writers, students must take task, purpose, and audience into careful consideration, choosing words, information, structures, and formats deliberately. They need to be able to use technology strategically when creating, refining, and collaborating on writing. They have to become adept at gathering information, evaluating sources, and citing material accurately, reporting findings from their research and analysis of sources in a clear and cogent manner. They must have the flexibility, concentration, and fluency to produce high-quality first-draft text under a tight deadline and the capacity to revisit and make improvements to a piece of writing over multiple drafts when circumstances encourage or require it. To meet these goals, students must devote significant time and effort to writing, producing numerous pieces over short and long time frames throughout the year.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12

The standards below begin at grade 6; standards for K–5 writing in history/social studies, science, and technical subjects are integrated into the K–5 Writing standards. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes		
1. Write arguments focused on *discipline-specific content*. a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from and supports the argument presented.	1. Write arguments focused on *discipline-specific content*. a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.	1. Write arguments focused on *discipline-specific content*. a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases. c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes (continued)		
2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style and objective tone. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.	2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with well chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).
3. (See note; not applicable as a separate requirement)	3. (See note; not applicable as a separate requirement)	3. (See note; not applicable as a separate requirement)

Note: Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history/social studies, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import. In science and technical subjects, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations or technical work that others can replicate them and (possibly) reach the same results.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Production and Distribution of Writing		
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.	5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
Research to Build and Present Knowledge		
7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
9. Draw evidence from informational texts to support analysis reflection, and research.	9. Draw evidence from informational texts to support analysis, reflection, and research.	9. Draw evidence from informational texts to support analysis, reflection, and research.
Range of Writing		
10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

MIDDLE LEVEL MATHEMATICS

Kentucky Core Academic Standards
Mathematics
Grades 6-8

Mathematics Core Academic Standards for grade 4 contain several headings, each one the title of a single progression having significant presence in that particular grade level. Under each of these progression headings, there appear core standards, divided into standards describing concepts student should understand and standards describing skills students should acquire.

Introduction

Toward greater focus and coherence

For over a decade, research studies of mathematics education in high-performing countries have pointed to the conclusion that the mathematics curriculum in the United States must become substantially more focused and coherent in order to improve mathematics achievement in this country. To deliver on the promise of common standards, the standards must address the problem of a curriculum that is "a mile wide and an inch deep." These Standards are a substantial answer to that challenge.

Understanding mathematics

These Standards define what students should understand and be able to do in their study of mathematics. Asking a student to understand something means asking a teacher to assess whether the student has understood it. But what does mathematical understanding look like? One hallmark of mathematical understanding is the ability to justify, in a way appropriate to the student's mathematical maturity, *why* a particular mathematical statement is true or where a mathematical rule comes from. There is a world of difference between a student who can summon a mnemonic device to expand a product such as $(a + b)(x + y)$ and a student who can explain where the mnemonic comes from. The student who can explain the rule understands the mathematics, and may have a better chance to succeed at a less familiar task such as expanding $(a + b + c)(x + y)$. Mathematical understanding and procedural skill are equally important, and both are assessable using mathematical tasks of sufficient richness.

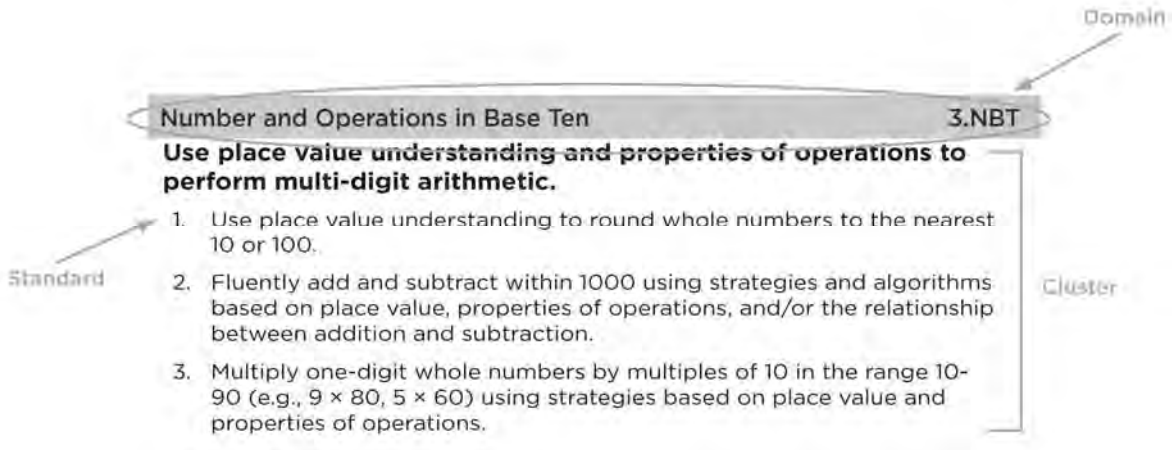
The Standards set grade-specific standards but do not define the intervention methods or materials necessary to support students who are well below or well above grade-level expectations. It is also beyond the scope of the Standards to define the full range of supports appropriate for English language learners and for students with special needs. At the same time, all students must have the opportunity to learn and meet the same high standards if they are to access the knowledge and skills necessary in their post-school lives. The Standards should be read as allowing for the widest possible range of students to participate fully from the outset, along with appropriate accommodations to ensure maximum participation of students with special education needs. For example, for students with disabilities reading should allow for use of Braille, screen reader technology, or other assistive devices, while writing should include the use of a scribe, computer, or speech-to-text technology. In a similar vein, speaking and listening should be interpreted broadly to include sign language. No set of grade-specific standards can fully reflect the great variety in abilities, needs, learning rates, and achievement levels of students in any given classroom. However, the Standards do provide clear signposts along the way to the goal of college and career readiness for all students.

How to read the grade level standards

Standards define what students should understand and be able to do.

Clusters are groups of related standards. Note that standards from different clusters may sometimes be closely related, because mathematics is a connected subject.

Domains are larger groups of related standards. Standards from different domains may sometimes be closely related.



These Standards do not dictate curriculum or teaching methods. For example, just because topic A appears before topic B in the standards for a given grade, it does not necessarily mean that topic A must be taught before topic B. A teacher might prefer to teach topic B before topic A, or might choose to highlight connections by teaching topic A and topic B at the same time. Or, a teacher might prefer to teach a topic of his or her own choosing that leads, as a byproduct, to students reaching the standards for topics A and B.

What students can learn at any particular grade level depends upon what they have learned before. Ideally then, each standard in this document might have been phrased in the form, “Students who already know ... should next come to learn ....” But at present this approach is unrealistic—not least because existing education research cannot specify all such learning pathways. Of necessity therefore, grade placements for specific topics have been made on the basis of state and international comparisons and the collective experience and collective professional judgment of educators, researchers and mathematicians. One promise of common state standards is that over time they will allow research on learning progressions to inform and improve the design of standards to a much greater extent than is possible today. Learning opportunities will continue to vary across schools and school systems, and educators should make every effort to meet the needs of individual students based on their current understanding.

These Standards are not intended to be new names for old ways of doing business. They are a call to take the next step. It is time for states to work together to build on lessons learned from two decades of standards based reforms. It is time to recognize that standards are not just promises to our children, but promises we intend to keep.

Mathematics | Standards for Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).

1. Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2. Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

4. Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6. Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7 × 8 equals the well remembered 7 × 5 + 7 × 3, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2 × 7 and the 9 as 2 + 7. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 – 3(x – y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

8. Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word “understand” are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices.

In this respect, those content standards which set an expectation of understanding are potential “points of intersection” between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.

Mathematics | Grade 6

In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.

(1) Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus students expand the scope of problems for which they can use multiplication and division to solve problems, and they connect ratios and fractions. Students solve a wide variety of problems involving ratios and rates.

(2) Students use the meaning of fractions, the meanings of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students use these operations to solve problems. Students extend their previous understandings of number and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers, and in particular negative integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.

(3) Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as $3x = y$) to describe relationships between quantities.

(4) Building on and reinforcing their understanding of number, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected.

Students in Grade 6 also build on their work with area in elementary school by reasoning about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms with fractional side lengths to extend formulas for the volume of a right rectangular prism to fractional side lengths. They prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.

Grade 6 Overview

Ratios and Proportional Relationships

- Understand ratio concepts and use ratio reasoning to solve problems.

The Number System

- Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- Compute fluently with multi-digit numbers and find common factors and multiples.
- Apply and extend previous understandings of numbers to the system of rational numbers.

Expressions and Equations

- Apply and extend previous understandings of arithmetic to algebraic expressions.
- Reason about and solve one-variable equations and inequalities.
- Represent and analyze quantitative relationships between dependent and independent variables.

Geometry

- Solve real-world and mathematical problems involving area, surface area, and volume.

Statistics and Probability

- Develop understanding of statistical variability.
- Summarize and describe distributions.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Ratios and Proportional Relationships 6.RP

Understand ratio concepts and use ratio reasoning to solve problems.

1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”

2 Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar.” “We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger.[1]

3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

   a. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

   b. Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?

   c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

   d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

The Number System 6.NS

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?*

Compute fluently with multi-digit numbers and find common factors and multiples.

2 Fluently divide multi-digit numbers using the standard algorithm.

3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For *example, express 36 + 8 as 4 (9 + 2).*

[1] Expectations for unit rates in this grade are limited to non-complex fractions.

Apply and extend previous understandings of numbers to the system of rational numbers.

5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.

b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.

c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

7 Understand ordering and absolute value of rational numbers.

a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.

b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write –3 oC > –7 oC to express the fact that –3 oC is warmer than –7 oC.

c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.

d. Distinguish comparisons of absolute value from statements about order. For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.

8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

Expressions and Equations 6.EE

Apply and extend previous understandings of arithmetic to algebraic expressions.

1 Write and evaluate numerical expressions involving whole-number exponents.

2 Write, read, and evaluate expressions in which letters stand for numbers.

a. Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation “Subtract y from 5” as 5 – y.

b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.

c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those

involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas V = s3 and A = 6 s2 to find the volume and surface area of a cube with sides of length s = 1/2.

3 Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.

4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.

Reason about and solve one-variable equations and inequalities.

5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.

8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

Represent and analyze quantitative relationships between dependent and independent variables.

9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For *example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.*

Geometry 6.G

Solve real-world and mathematical problems involving area, surface area, and volume.

1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas V = l w h and V = b h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Statistics and Probability 6.SP

Develop understanding of statistical variability.

1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For *example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*
2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

Summarize and describe distributions.

4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
5. Summarize numerical data sets in relation to their context, such as by:
    a. Reporting the number of observations.
    b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
    c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
    d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Mathematics | Grade 7

In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.

(1) Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease. Students solve problems about scale drawings by relating corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.

(2) Students develop a unified understanding of number, recognizing fractions, decimals (that have a finite or a repeating decimal representation), and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication and division. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers. They use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems.

3) Students continue their work with area from Grade 6, solving problems involving the area and circumference of a circle and surface area of three-dimensional objects. In preparation for work on congruence and similarity in Grade 8 they reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions, and they gain familiarity with the relationships between angles formed by intersecting lines. Students work with three-dimensional figures, relating them to two-dimensional figures by examining cross-sections. They solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes and right prisms.

(4) Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.

Grade 7 Overview

Ratios and Proportional Relationships

- Analyze proportional relationships and use them to solve real-world and mathematical problems.

The Number System

- Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

Expressions and Equations

- Use properties of operations to generate equivalent expressions.
- Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

Geometry

- Draw, construct and describe geometrical figures and describe the relationships between them.
- Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

Statistics and Probability

- Use random sampling to draw inferences about a population.
- Draw informal comparative inferences about two populations.
- Investigate chance processes and develop, use, and evaluate probability models.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Ratios and Proportional Relationships 7.RP

Analyze proportional relationships and use them to solve real-world and mathematical problems.

1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.
2. Recognize and represent proportional relationships between quantities.
    a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
    b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
    c. Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.
    d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.
3. Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups *and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*

The Number System 7.NS

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

1. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
    a. Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.
    b. Understand $p + q$ as the number located a distance $|q|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
    c. Understand subtraction of rational numbers as adding the additive inverse, $p – q = p + (–q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
    d. Apply properties of operations as strategies to add and subtract rational numbers.
2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
    a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(–1)(–1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
    b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $–(p/q) = (–p)/q = p/(–q)$. Interpret quotients of rational numbers by describing real world contexts.

c. Apply properties of operations as strategies to multiply and divide rational numbers.

d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.

3 Solve real-world and mathematical problems involving the four operations with rational numbers.[1]

Expressions and Equations 7.EE

Use properties of operations to generate equivalent expressions.

1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*

Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.

4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.

Geometry 7.G

Draw, construct, and describe geometrical figures and describe the relationships between them.

1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

[1] Computations with rational numbers extend the rules for manipulating fractions to complex fractions.

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Statistics and Probability 7.SP

Use random sampling to draw inferences about a population.

1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based *on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*

Draw informal comparative inferences about two populations.

3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.

4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.

Investigate chance processes and develop, use, and evaluate probability models.

5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For *example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.*

7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.

   a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.

b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?

8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.

b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.

c. Design and use a simulation to generate frequencies for compound events. For example, use random digits as *a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*

Mathematics | Grade 8

In Grade 8, instructional time should focus on three critical areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

(1) Students use linear equations and systems of linear equations to represent, analyze, and solve a variety of problems. Students recognize equations for proportions ($y/x = m$ or $y = mx$) as special linear equations ($y = mx + b$), understanding that the constant of proportionality (m) is the slope, and the graphs are lines through the origin. They understand that the slope (m) of a line is a constant rate of change, so that if the input or x-coordinate changes by an amount A, the output or y-coordinate changes by the amount $m \cdot A$. Students also use a linear equation to describe the association between two quantities in bivariate data (such as arm span vs. height for students in a classroom). At this grade, fitting the model, and assessing its fit to the data are done informally. Interpreting the model in the context of the data requires students to express a relationship between the two quantities in question and to interpret components of the relationship (such as slope and y-intercept) in terms of the situation.

Students strategically choose and efficiently implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality and the concept of logical equivalence, they maintain the solutions of the original equation. Students solve systems of two linear equations in two variables and relate the systems to pairs of lines in the plane; these intersect, are parallel, or are the same line. Students use linear equations, systems of linear equations, linear functions, and their understanding of slope of a line to analyze situations and solve problems.

(2) Students grasp the concept of a function as a rule that assigns to each input exactly one output. They understand that functions describe situations where one quantity determines another. They can translate among representations and partial representations of functions (noting that tabular and graphical representations may be partial representations), and they describe how aspects of the function are reflected in the different representations.

(3) Students use ideas about distance and angles, how they behave under translations, rotations, reflections, and dilations, and ideas about congruence and similarity to describe and analyze two-dimensional figures and to solve problems. Students show that the sum of the angles in a triangle is the angle formed by a straight line, and that various configurations of lines give rise to similar triangles because of the angles created when a transversal cuts parallel lines. Students understand the statement of the Pythagorean Theorem and its converse, and can explain why the Pythagorean Theorem holds, for example, by decomposing a square in two different ways. They apply the Pythagorean Theorem to find distances between points on the coordinate plane, to find lengths, and to analyze polygons. Students complete their work on volume by solving problems involving cones, cylinders, and spheres.

Grade 8 Overview

the number System

- Know that there are numbers that are not rational, and approximate them by rational numbers.

Expressions and Equations

- Work with radicals and integer exponents.
- Understand the connections between proportional relationships, lines, and linear equations.
- Analyze and solve linear equations and pairs of simultaneous linear equations.

Functions

- Define, evaluate, and compare functions.
- Use functions to model relationships between quantities.

Geometry

- Understand congruence and similarity using physical models, transparencies, or geometry software.
- Understand and apply the Pythagorean theorem.
- Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

Statistics and Probability

- Investigate patterns of association in bivariate data.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

The Number System 8.NS

Know that there are numbers that are not rational, and approximate them by rational numbers.

1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π2). For example*, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*

Expressions and Equations 8.EE

Work with radicals and integer exponents.

1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32 × 3–5 = 3–3 = 1/33 = 1/27.

2 Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.

3 Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 × 108 and the population of the world as 7 × 109, and determine that the world population is more than 20 times larger.

4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

Understand the connections between proportional relationships, lines, and linear equations.

5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.

Analyze and solve linear equations and pairs of simultaneous linear equations.

7 Solve linear equations in one variable.

   a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers).

   b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

8 Analyze and solve pairs of simultaneous linear equations.

   a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.

c. Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.

Functions 8.F

Define, evaluate, and compare functions.

1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.[27]

2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.

3 Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function A = s2 giving the area of a square as a function of its side length is not linear because its graph contains the points (1*,1), (2,4) and (3,9), which are not on a straight line.*

Use functions to model relationships between quantities.

4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x*, *y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

Geometry 8.G

Understand congruence and similarity using physical models, transparencies, or geometry software.

1 Verify experimentally the properties of rotations, reflections, and translations:

a. Lines are taken to lines, and line segments to line segments of the same length.

b. Angles are taken to angles of the same measure.

c. Parallel lines are taken to parallel lines.

2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.

3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.

4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.

[27] Function notation is not required in Grade 8.

5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.

Understand and apply the Pythagorean Theorem.

6 Explain a proof of the Pythagorean Theorem and its converse.

7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Statistics and Probability 8.SP

Investigate patterns of association in bivariate data.

1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.

3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.

For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.

4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For *example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

MIDDLE LEVEL PRACTICAL LIVING

(HEALTH AND PHYSICAL EDUCATION)

Kentucky Core Academic Standards – Practical Living – Sixth Grade

Individuals are required to make daily decisions regarding health issues that affect their immediate and long-term health. Maintaining a health way of living requires a balance of physical, mental, emotional and social well-being. The 6th grade Health Education program provides students with knowledge skills necessary to confront health related issues and make a smooth transition from puberty to adolescence. The sixth grade health education curriculum emphasizes development of decision-making skills related to the essential areas of self-esteem, peer pressure, physical wellness, nutrition, safety and first aid, disease prevention, exercise, fitness, human growth and development, stress management, conflict resolution, substance abuse, group membership, goal setting, mental and emotional wellness, community resources and services.

Literacy in physical education means competence in movement forms, the knowledge and application of concepts and principles related to motor skills and the adoption of a healthy, physically active lifestyle. Competence in movement forms makes possible the enjoyment of participation in physical activity and establishes the foundation for continued motor skill acquisition. Increased skill acquisition, in turn, affords the student the capacity for successful and advance levels of performance that further increase the likelihood of participation in physical activity.

Students in 6th grade combine fundamental skills into more complex movement forms in modified game, dance and recreational activities. Cooperative and competitive small-group games are appropriate with an emphasis being placed on developing skills and tactical understanding. Students use feedback to initiate and maintain practice to improve skill performance. Students assess their health-related fitness status and set reasonable and appropriate goals for development, maintenance and improvement. Social interaction becomes more complex as peer pressure becomes increasingly pronounced, impacting individual performance. Students solve problems and make responsible decisions as they work together. They exhibit a physically active lifestyle at school and outside the school environment.

The Health and Physical Education content standards at the 6th grade level are directly aligned with Kentucky's **Academic Expectations**. The Health and Physical Education standards are organized around five "Big Ideas" that are important to the discipline of health and physical education. These big ideas are: Personal Wellness, Nutrition, Safety, Psychomotor Skills and Lifetime Physical Wellness. The Big Ideas are conceptual organizers for health and physical education and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to health and physical education. The understandings represent the desired results- what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lessons plans.

Skills and concepts describe the ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for health and physical education are fundamental to health literacy and build on prior learning.

The health and physical education program provides a connection to Kentucky's Learning Goals 3 (self-sufficient individuals) and Learning Goal 4 (responsible group member), which are included in Kentucky statue, but they are not included in the state's academic assessment program. These connections provide a comprehensive link between essential content, skills and abilities important to learning. In addition Learning Goal 5 (think and solve problems) and Learning Goal 6 (connect and integrate knowledge) are addressed in health and physical education.

All physical education courses taught in the state of Kentucky must be in compliance with the Federal Special Education Law and Title IX and shall not include practice for or participation in interscholastic athletics.

Big Idea: Personal Wellness (Health Education)

Wellness is maximum well-being or total health. Personal wellness is a combination of physical, mental, emotional, spiritual and social well-being. It involves making behavioral choices and decisions each day that promote an individual's physical well-being, the prevention of illnesses and diseases, and the ability to remain, physically, mentally, spiritually, socially and emotionally healthy.

Academic Expectations

2.29 Students demonstrate skills that promote individual well-being and healthy family relationships.
2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.32 Students demonstrate strategies for becoming and remaining mentally and emotionally healthy.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
4.1 Students effectively use interpersonal skills.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- it is important to assume responsibility for personal health.
- Interactions with others are an integral part of the human life experience and contribute to healthy relationships.
- the environment, lifestyle, family history, peers and other factors impact physical, social, mental and emotional health.
- culture, values (e.g., individual, family, community) media and use of technology (e.g., television, computers, MP3 Players, electronic/arcade games) can influence personal behavioral choices games) can influence personal health.
- behavioral choices affect physical, mental, emotional and social well-being and can have positive or negative consequences on one's health.
- positive health habits can help prevent injuries and the spreading of diseases to self and others.
- self-management and coping strategies can enhance mental and emotional health.
- a variety of resources are available to inform, treat and counsel individuals with physical, mental, social and emotional health needs.

Grade 6 Skills and Concepts – Personal and Physical Health

Students will

- understand the importance of assuming responsibility for personal health behaviors:
  - predict how decisions regarding health behaviors (e.g., hygiene, diet, exercise) have consequences for self and others
  - analyze personal decisions that impact an individual's emotional, sexual and reproductive health (e.g., abstinence)
  - explain how rights and responsibilities are interrelated
- explore and analyze how an individuals behaviors and choices of diet, exercise and rest affect the body
- analyze various communication methods and barriers for expressing health information and ideas

Grade 6 Skills and Concepts – Growth and Development

Students will

- apply strategies and skills needed to obtain personal health goals during adolescence and identify the physical, social and emotional changes (e.g., growth spurts, peer influence, self-confidence, mood swings) that occur during adolescence
- explain basic structures and function of the reproductive system

Big Idea: Personal Wellness (Health Education) – Continued

Grade 6 Skills and Concepts – Social, Mental and Emotional Health
Students will

- demonstrate social interaction skills by:
  - using appropriate means to express needs, wants and feelings
  - using and describe the importance of effective social interaction skills (e.g., respect, self-advocacy, cooperation, communication, identifying and being open to different perspectives and points of view, empathy, friendship)
  - recommending effective strategies for responding to stress, conflict, peer pressure and bullying
  - interpreting how individuals impact the effective functioning of groups
- demonstrate the ability to apply a decision-making process to health issues and problems individually and collaboratively
- identify common social and emotional problems (aggression, anxiety, depression, grief) and describe self-management and coping strategies (goal setting, refusal skills, decision making and time management) for addressing these problems

Grade 6 Skills and Concepts – Family and Community Health
Students will

- analyze how personal health choices, individual well-being and use of health services can be influenced by:
  - family traditions/values
  - technology and media messages
  - cultural beliefs
  - physical, social and emotional environments
  - information from peers

Grade 6 Skills and Concepts – Communicable, Non-Communicable and Chronic Diseases Prevention
Students will

- demonstrate an understanding of diseases by:
  - describing symptoms, causes, patterns of transmission, prevention and treatments of communicable diseases (colds, flu, mononucleosis, hepatitis, HIV/STD, tuberculosis)
  - describing symptoms, causes, patterns of transmission, prevention and treatments of non-communicable diseases (cancer, cardiovascular disease, diabetes, obesity, asthma, emphysema)
- investigate family history, environment, lifestyle and other risk factors related to the cause or prevention of disease and other health problems
- demonstrate an understanding of how to maintain a healthy body by:
  - explaining how health is influenced by the interaction of body systems (e.g., reproductive, digestive, circulatory, skeletal, respiratory)
  - describing ways pathogens from the environment (e.g., air, food, people) enter the body and explaining how body defenses fight pathogens
  - explaining how personal hygiene practices affect physical, mental/emotional and social health; explaining how personal health habits (e.g., hand washing, care of teeth and eyes, sun protection) affect self and others in the prevention and spread of disease
  - identifying health care providers and describing reasons for preventive care

Big Idea: Personal Wellness (Health Education) – Continued

Grade 6 Skills and Concepts – Alcohol, Tobacco and Other Drugs
Students will

- demonstrate an understanding of the use and misuse of alcohol, tobacco and other drugs by:
  - distinguishing between legal (e.g., over the counter, prescription drugs) and illegal drugs (e.g., inhalants, marijuana, stimulants, depressants) and describing how their usage affects the body systems
  - describing the immediate and long-term effects of alcohol and drug usage and the impact on physical, mental, emotional and social health (e.g., effects on family life)
  - identifying resources available to individuals seeking treatment or counseling for negative behaviors or addictions

Big Idea: Nutrition (Health Education)

Proper nutrition is critical to good health. To maintain a healthy weight, good dietary habits and physical activity are essential. Nutritious foods are necessary for growth, development and maintenance of healthy bodies.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
3.2 Students will demonstrate the ability to maintain a healthy lifestyle.
3.5 Students will demonstrate self-control and self-discipline.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use decision-making process to make informed decisions among options.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- proper nutrition is essential to growth and development.
- nutrients have a role in the development of an individual's health.
- resources are available to assist in making nutritional choices.
- individuals, families and community values influence nutritional choices.

Grade 6 Skills and Concepts

Students will

- identify the role of nutrients and food sources which are important in the growth and development of healthy bodies
- explain the role of nutrition on the body systems impacting growth and development
- interpret, explain and apply the recommendations of national resources (e.g., Food Guide Pyramid (FGP), Dietary Guidelines for Americans, National Dairy Council) in making healthful food choices for a balanced diet
- analyze factors (e.g., geography, convenience, cost, advertising) that influence healthy food choices
- explain the role of nutrition on the body systems impacting the growth and development of healthy bodies
- use the nutritional information provided on food labels to explain how it can impacts dietary choices

Big Idea: Safety (Health Education)

Accidents are a major cause of injury and death to children and adolescents. Unintentional injuries involving motor vehicle, falls, drowning, fires, firearms and poisons can occur at home, school and work. Safe behavior protects a person from danger and lessens the effects of harmful situations.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
3.2 Students will demonstrate the ability to maintain a healthy lifestyle.
4.3 Students individually demonstrate consistent, responsive and caring behavior.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.1 Students use skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use a decision-making process to make informed decisions among-options.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- safety practices and procedures help to prevent injuries and provide a safe environment.
- community and state resources are available to assist in hazardous situations.
- proper procedures must be used in emergency situations.

Grade 6 Skills and Concepts

Students will

- explain reasons for safety practices (e.g., walking in opposite direction of violence, staying calm in dangerous situations) for dealing with a variety of health hazards (e.g., firearms, motorized vehicles or potentially unsafe or threatening situations) encountered by adolescents
- describe potential hazards in and around the home and school explain how to prevent injuries
- Identify and practice safety procedures needed for emergencies (e.g., tornado, fire, earthquake) at home and school
- recognize life threatening emergencies and identify basic first-aid procedures for responding to a variety of life-threatening emergencies (e.g., choking, broken bones, shock, poisons, burns, allergic reactions, bleeding)
- describe how to avoid dangerous situations involving strangers, fires and internet safety
- identify local and state health/safety agencies (e.g., health department, fire department, state police, hospital transport services) and the services they provide
- access and use reliable resources on safety guidelines for avoiding injuries and dangerous situations
- identify and practice communications skills needed in emergency situations

Big Idea: Psychomotor Skills (Physical Education)

Cognitive information can be used to understand and enhance the development of motor skills such as movement sequences and patterns. Individuals who understand their bodies and how to perform various movements will be safer and more productive in recreation and work activities. Development of psychomotor skills contributes to the development of social and cognitive skills.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.34 Students perform physical movements skills effectively in a variety of settings.
2.35 Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.
4.1 Students effectively use interpersonal skills.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- movement concepts, principles, strategies and tactics apply to the learning and performance of physical activities.
- motor skills need to be refined, combined and varied in the development of specialized skills (e.g., serving, catching with a glove, dribbling, punting).

Grade 6 Skills and Concepts

Students will

- identify and apply principles of motor skill refinement (e.g. accuracy, technique, movement) that are necessary for skill development
- demonstrate a variety of locomotor and combination skills in a movement pattern
- use non-locomotor, locomotor and combination skills to demonstrate movements in creative sequences and in simple patterned dances, games and other activities
- demonstrate a variety of non-locomotor, locomotor and combination skills while participating in different games and sports
- demonstrate refined manipulative skills of throwing, catching, kicking and striking while developing motor skills (e.g., sliding, running, jumping) for use in games and other activities that lead to more complex games and sports (e.g., long jump, hurdles, volleyball, soccer, softball)
- demonstrate how transitional motor skills (e.g., punting, serving, dribbling) are influenced by space, force and time

Big Idea: Lifetime Physical Wellness (Physical Education)

Lifetime wellness is health-focused. The health-related activities and content utilized are presented to help students become more responsible for their overall health status, and to prepare each student to demonstrate knowledge and skills that promote physical activity throughout their lives. Physical education uses physical activity as a means to help students acquire skills, fitness, knowledge and attitudes that contribute to their optimal development and well-being. Physical, mental, emotional and social health is strengthened by regular involvement in physical activities.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.34 Students perform physical movements skills effectively in a variety of settings.
2.35 Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.
3.1 Students demonstrate positive growth in self-concept through appropriate tasks or projects.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
3.7 Students demonstrate the ability to learn on one's own.
4.2 Students use productive team membership skills.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- leisure/recreational or competitive physical activities provide opportunities for self-expression, social interactions and can be enjoyable and challenging.
- intrinsic values and other benefits (physical, emotional/mental, social) are gained by regular participation in leisure/recreational or competitive activities.
- techniques, strategies and practice are important for improving performance of sport skills.
- rules impact effective participation in physical activities.
- personal and social behavior that shows respect to self and others impacts enjoyment and safety in physical activity settings.
- regular participation in health-related, physical activity supports the goals of fitness and a healthier lifestyle throughout life.
- fitness principles and techniques are used to improve/maintain physical health.

Big Idea: Lifetime Physical Wellness (Physical Education) – Continued

Grade 6 Skills and Concepts

Students will

- identify several moderate to vigorous physical activities that provide personal pleasure
- explain the physical, emotional/mental and social value in participating in physical activity
- describe the physical, emotional/mental and social benefits gained from regular participation in leisure/recreational or competitive physical activities
- recognize through participation in a variety of activities that personal skill development results from prior experiences, natural ability and practice
- describe the relationship between effort and improvement in skills gained from physical activities
- participate regularly in physical activity
- when participating in a variety of physical activities, sports and games:
  - identify and apply rules of behavior and fair play (e.g., accepting authoritative decisions, assessing one's own performance level, accepting skills and abilities of others through verbal and nonverbal actions for spectators and/or participants)
  - demonstrate sportsmanship, cooperation, teamwork and conflict resolution
  - identify and use appropriate safety principles, rules, procedures and etiquette
  - identify offensive and defensive strategies used in games and sports
- identify and assess activities that enhance the health related fitness components (muscular strength, muscular endurance, flexibility, body composition, cardio respiratory endurance)
- explain the meaning of the F.I.T.T. Principle (Frequency, Intensity, Type, Time) and examine their impact on improving personal fitness
- identify and assess lifetime activities (e.g., biking, hiking, horseback riding, swimming) that enhance the health-related fitness components (muscular strength, muscular endurance, flexibility, body composition, cardio respiratory endurance)
- investigate how the systems of the body affect an individual's personal fitness level

Kentucky Core Academic Standards – Practical Living – Seventh Grade

The purpose of health education is to help students acquire an understanding of health concepts and skills and to apply them in making healthy decisions to improve, sustain, and promote personal, family and community health.

Health education instruction for seventh grade emphasizes students generating and choosing positive alternatives to risky behaviors. They use skills to resist peer pressure and manage stress and anxiety. Students are able to relate health choices (e.g., nutrition, physical activity) to alertness, feelings and performance at school or during physical activity. Students exhibit a healthy lifestyle, interpret health information and promote good health.

Motor-skill acquisition and performance are enhanced by the application of movement concepts and principles in the 7th grade physical education program. Increased knowledge and practice promotes independent learning and more regular and effective participation in physical activity. Understanding not only how motor skills develop but the relationships between physical activity and its immediate and identifiable effects on the body contributes to and understanding of the benefits of a healthy lifestyle. In grade seven, students continue to develop competence in modified versions of game/sport, dance and recreational activities. They vary movement during dynamic and changing game situations. The ability to analyze skill performance through observing and understanding critical elements (isolated, small parts of the whole skill or movement) is increasingly apparent, as is the application of basic scientific principles of movement and personal fitness. Students relate the importance of physical activity to health, focusing particularly on obesity and stress. They create plans for improving personal fitness. Students continue to develop responsible personal and social behaviors by demonstrating decision-making skills, conflict-resolution skills, appropriate etiquette and respect for others. Students achieve and maintain personal fitness standards and set reasonable and appropriate goals for improvement or maintenance of health-related fitness.

The Health and Physical Education content standards at the 7th grade level are directly aligned with Kentucky's **Academic Expectations**. The Health and Physical Education standards are organized around five "Big Ideas" that are important to the discipline of health and physical education. These big ideas are: Personal Wellness, Nutrition, Safety, Psychomotor Skills and Lifetime Physical Wellness. The Big Ideas are conceptual organizers for health and physical education and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to health and physical education. The understandings represent the desired results- what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lessons plans.

Skills and concepts describe the ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for health and physical education are fundamental to health literacy and build on prior learning.

The health and physical education program provides a connection to Kentucky's Learning Goals 3 (self-sufficient individuals) and Learning Goal 4 (responsible group member), which are included in Kentucky statue, but they are not included in the state's academic assessment program. These connections provide a comprehensive link between essential content, skills and abilities important to learning. In addition Learning Goal 5 (think and solve problems) and Learning Goal 6 (connect and integrate knowledge) are addressed in health and physical education.

All physical education courses taught in the state of Kentucky must be in compliance with the Federal Special Education Law and Title IX and shall not include practice for or participation in interscholastic athletics.

Big Idea: Personal Wellness (Health Education)

Wellness is maximum well-being or total health. Personal wellness is a combination of physical, mental, emotional, spiritual and social well-being. It involves making behavioral choices and decisions each day that promote an individual's physical well-being, the prevention of illnesses and diseases and the ability to remain, physically, mentally, spiritually, socially and emotionally healthy.

Academic Expectations

2.29 Students demonstrate skills that promote individual well-being and healthy family relationships.
2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.32 Students demonstrate strategies for becoming and remaining mentally and emotionally healthy.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
4.1 Students effectively use interpersonal skills.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- individuals have a responsibility to advocate for personal, family and community health.
- interactions with others are an integral part of the human life experience and contribute to healthy relationships.
- physical, social, emotional and mental changes occur during adolescence and throughout life.
- the environment, lifestyle, family history, peers and other factors impact physical, social, mental and emotional health.
- culture, values (e.g., individual, family and community) media and use of technology (e.g., television, computers, MP3 Players, electronic/arcade games) can influence personal health.
- behavioral choices affect physical, mental, emotional and social well-being and can have positive or negative consequences on one's health.
- positive health habits can help prevent injuries and the spreading of diseases to self and others.
- self-management and coping strategies can enhance mental and emotional health.
- a variety of resources are available to inform, treat and counsel individuals with physical, mental, social and emotional health needs.

Grade 7 Skills and Concepts – Personal and Physical Health

Students will

- identify ways to advocate for personal, family and community health
- understand the importance of assuming responsibility for personal health behaviors:
  - predict how decisions regarding health behaviors have consequences for self and others
  - analyze decisions that impact an individual's emotional, sexual, and reproductive health (e.g., describing benefits of abstaining from sexual activity: preventing pregnancy, preventing STDs, maintaining self-esteem)
  - explain how rights and responsibilities are interrelated
- evaluate how an individual's behaviors and choices of diet, exercise and rest affect the body

Grade 7 Skills and Concepts – Growth and Development

Students will

- apply strategies and skills needed to obtain personal health goals during adolescence
- describe the physical, social and emotional changes (e.g., growth spurts, peer influence, self-confidence, mood swings) that occur during adolescence
- explain basic structures and functions of the reproductive system as it relates to the human life cycle

Big Idea: Personal Wellness (Health Education) – Continued

Grade 7 Skills and Concepts – Social, Mental and Emotional Health
Students will

- demonstrate social interaction skills by:
  - using appropriate means to express needs, wants and feelings
  - using and explaining the importance of effective social interaction skills (e.g., respect, self-advocacy, cooperation, communication, identifying and being open to different perspectives and points of view, empathy, friendship)
  - recommending and justify effective strategies (e.g., problem solving, decision making, refusal skills, anger management, conflict resolution) for responding to stress, conflict, peer pressure and bullying
  - interpreting how individuals impact the effective functioning of groups
- demonstrate the ability to apply a decision-making process to health issues and problems individually and collaboratively
- identify common social and emotional problems (aggression, anxiety, depression, grief) and describe self-management and coping strategies (goal setting, refusal skills, decision making and time management) for addressing these problems

Grade 7 Skills and Concepts – Family and Community Health
Students will

- analyze how personal health choices, individual well-being and use of health services can be influenced by:
  - family traditions/values
  - technology and media messages
  - cultural beliefs

Grade 7 Skills and Concepts – Communicable, Non-Communicable and Chronic Diseases Prevention
Students will

- demonstrate an understanding of diseases by:
  - describing symptoms, causes, patterns of transmission, prevention and treatments of communicable diseases (colds, flu, mononucleosis, hepatitis, HIV/STD, tuberculosis)
  - describing symptoms, causes, patterns of transmission, prevention and treatments of non-communicable diseases (cancer, cardiovascular disease, diabetes, obesity, asthma, emphysema)
- investigate family history, environment, lifestyle and other risk factors related to the cause or prevention of disease and other health problems
- demonstrate an understanding of how to maintain a healthy body by:
  - explaining how health is influenced by the interaction of body systems
  - describing ways pathogens from the environment (e.g., air, food, people) enter the body and explaining how body defenses fight pathogens
  - explaining how personal hygiene practices affect physical, mental/emotional and social health; explaining how personal health habits (e.g., hand washing, care of teeth and eyes, sun protection) affect self and others in the prevention and spread of disease
  - identifying health care providers and describing reasons for preventive care

Big Idea: Personal Wellness (Health Education) – Continued

Grade 7 Skills and Concepts – Alcohol, Tobacco and Other Drugs
Students will

- demonstrate an understanding of the use and misuse of alcohol, tobacco and other drugs by:
  - distinguishing between legal (e.g., over the counter, prescription drugs) and illegal drugs (e.g., inhalants, marijuana, stimulants, depressants)and describing how their usage affects the body systems
  - describing the immediate/long-term effects of alcohol, tobacco and illegal drug usage and analyzing their impact on health
  - describing resources available to individuals seeking treatment or counseling for negative behaviors or addictions

Big Idea: Nutrition (Health Education)

Proper nutrition is critical to good health. To maintain a healthy weight, good dietary habits and physical activity are essential. Nutritious foods are necessary for growth, development and maintenance of healthy bodies.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
3.2 Students will demonstrate the ability to maintain a healthy lifestyle.
3.5 Students will demonstrate self-control and self-discipline.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use decision-making process to make informed decisions among options.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- proper nutrition is essential to growth and development.
- nutrients have a role in the development of an individual's health.
- resources are available to assist in making nutritional choices.
- individuals, families and community values influence nutritional choices.

Grade 7 Skills and Concepts

Students will

- analyze factors (e.g., geography, cultural background, convenience, advertising) that influence healthy food choices
- identify organs and body systems and explain how they are affected by nutrients
- apply the decision-making process when analyzing resources needed in making dietary choices
- describe the role of nutrients and food sources which are important in the growth and development of healthy bodies
- use print and non-print resources (e.g., Food Guide Pyramid (FGP), *Dietary Guidelines for Americans*, United States Department of Agriculture (USDA), National Dairy council), to make healthful food choices in real-life situations

Big Idea: Safety (Health Education)

Accidents are a major cause of injury and death to children and adolescents. Unintentional injuries involving motor vehicle, falls, drowning, fires, firearms and poisons can occur at home, school and work. Safe behavior protects a person from danger and lessens the effects of harmful situations.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
3.2 Students will demonstrate the ability to maintain a healthy lifestyle.
4.3 Students individually demonstrate consistent, responsive and caring behavior.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.1 Students use skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use a decision-making process to make informed decisions among-options.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- safety practices and procedures help to prevent injuries and provide a safe environment.
- community, state and federal resources are available to assist in hazardous situations.
- proper procedures must be used in emergency situations.

Grade 7 Skills and Concepts

Students will

- explain how health hazards (e.g., firearms, motorized vehicles or potentially unsafe or threatening situations) and safety practices (e.g., walking in opposite direction of violence, staying calm in dangerous situations, wearing protective gear, notifying appropriate authority) can influence their personal health
- identify and describe potential hazards in and around the home and school explain how to prevent injuries
- explain and practice safety procedures needed for emergencies (e.g., weather, fire, tornado, lock down) at home or school
- identify life threatening emergencies and describe basic first-aid procedures for responding to a variety of life-threatening emergencies (e.g., choking, broken bones, shock, poisons, burns, allergic reactions, bleeding)
- identify and access the available local, state and federal health and safety agencies (e.g., health departments, Center for Disease Control and Prevention (CDC), National Guard) and explain the services they provide
- use reliable safety resources and guidelines to help in avoiding injuries and dangerous situations (e.g., internet use, vehicles, firearms, watercraft)
- identify and practice (e.g., role play, simulation) communications skills needed in emergency situations

Big Idea: Psychomotor Skills (Physical Education)

Cognitive information can be used to understand and enhance the development of motor skills such as movement sequences and patterns. Individuals who understand their bodies and how to perform various movements will be safer and more productive in recreation and work activities. Development of psychomotor skills contributes to the development of social and cognitive skills.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.34 Students perform physical movements skills effectively in a variety of settings.
2.35 Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.
4.1 Students effectively use interpersonal skills.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- movement concepts, principles, strategies and tactics apply to the learning and performance of physical activities.
- motor skills need to be refined, combined and varied in the development of specialized skills (e.g., serving, catching with a glove, dribbling, punting.

Grade 7 Skills and Concepts

Students will

- interpret the role that principles of motor skill refinements (e.g. accuracy, technique, movement) have in skill development
- demonstrate increased competence in motor skills for individual, dual and team activities
- use non-locomotor, locomotor and combination skills to demonstrate movements in creative sequences and in simple patterned dances, games and other activities
- improve techniques to achieve consistency in performance of fundamental manipulative skills (e.g., throwing, catching, kicking, dribbling, striking) for participation in games and activities
- demonstrate and explain how transitional motor skills (e.g., punting, serving, dribbling) are impacted by space, force and time

Big Idea: Lifetime Physical Wellness (Physical Education)

Lifetime wellness is health-focused. The health-related activities and content utilized are presented to help students become more responsible for their overall health status and to prepare each student to demonstrate knowledge and skills that promote physical activity throughout their lives. Physical Education uses physical activity as a means to help students acquire skills, fitness, knowledge and attitudes that contribute to their optimal development and well-being. Physical, mental, emotional and social health is strengthened by regular involvement in physical activities.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.34 Students perform physical movements skills effectively in a variety of settings.
2.35 Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.
3.1 Students demonstrate positive growth in self-concept through appropriate tasks or projects.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
3.7 Students demonstrate the ability to learn on one's own.
4.2 Students use productive team membership skills.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- leisure/recreational or competitive physical activities provide opportunities for self-expression, social interactions and can be enjoyable and challenging.
- intrinsic values and other benefits (physical, emotional/mental, social) are gained by regular participation in leisure/recreational or competitive activities.
- techniques, strategies and practice are important for improving performance of sport skills.
- rules impact effective participation in physical activities.
- personal and social behavior that shows respect to self and others impacts enjoyment and safety in physical activity settings.
- regular participation in health-related, physical activity supports the goals of fitness and a healthier lifestyle throughout life.
- fitness principles and techniques are used to improve/maintain physical health.

Big Idea: Lifetime Physical Wellness (Physical Education) – Continued

Grade 7 Skills and Concepts

Students will

- identify moderate to vigorous physical activities that will provide for personal enjoyment and health benefits
- examine and analyze the personal benefits derived from regular participation in leisure/recreational or competitive physical activities
- evaluate the relationship between effort and skill improvement
- demonstrate and apply the technique of practice progression to personal skill development
- access and describe techniques (e.g., practice, lessons, videos, drills, peer/teacher review, self-evaluation) for improving performance in games and sports
- participate regularly in physical activity
- when participating in a variety of physical activities, sports and games:
  - identify and apply rules of behavior and fair play (e.g., accepting authoritative decisions, assessing one's own performance level, accepting skills and abilities of others through verbal and nonverbal actions for spectators and/or participants)
  - demonstrate sportsmanship, cooperation, teamwork and conflict resolution
  - recognize and use safety principles, rules, procedures and etiquette
  - describe how offensive and defensive strategies are used in games and sports; create, explore and devise strategies for games or physical activities
- explain the components of fitness (muscular strength, muscular endurance, flexibility, body composition, cardio-respiratory endurance) and how the FITT Principle (Frequency, Intensity, Type, Time) can be used to maintain and improve fitness
- identify and assess lifetime activities (e.g., bowling, tennis, swimming, walking) that enhance the health-related fitness
- investigate how the systems of the body affect an individual's personal fitness level
- explain the relationship of nutrition and exercise to physical fitness

Kentucky Core Academic Standards – Practical Living – Eighth Grade

The purpose of health education is to help students acquire an understanding of health concepts and skills and to apply them in making healthy decisions to improve, sustain and promote personal, family and community health.

Students in 8th grade have an understanding of the origins and causes of diseases, including the relationship between family history and certain health risks. They begin to relate short- and long-term consequences of health choices and apply health skills to specific personal, family and community health concerns. Students discern relationships among all components of health and wellness and knowledgeably use consumer information.

The 8th grade physical education program assists in the continuing physical, mental, social and emotional development of students as they make the transition from puberty to adolescence. There is a focus on fitness activities, techniques, strategies and rule of games and sports. Participation in lifetime activities such as golf, tennis, bowling, archery, running, hiking, swimming and cycling are also emphasized. Students in 8th grade demonstrate competence in skillful movement in modified, dynamic game situations and in a variety of dance and recreational activities. They transition from modified versions of movement forms to more complex applications across all types of activities — game/sport, dance and recreational pursuits. Students demonstrate the ability to assume responsibility for guiding their own learning as they apply their knowledge and abilities to create a practice plan to improve performance in a selected game/sport, dance or recreational pursuit. They demonstrate mature responsibility as they show respect for others, make reasoned and appropriate choices, resist negative peer pressure and exhibit fair play. They have a repertoire of abilities across a variety of game/sport, dance and recreational pursuits and begin to develop competence in specialized versions of lifetime game/sport activities.

The Health and Physical Education content standards at the 8th grade level are directly aligned with Kentucky's **Academic Expectations.** The Health and Physical Education standards are organized around five "Big Ideas" that are important to the discipline of health and physical education. These big ideas are: Personal Wellness, Nutrition, Safety, Psychomotor Skills and Lifetime Physical Wellness. The Big Ideas are conceptual organizers for health and physical education and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to health and physical education. The understandings represent the desired results- what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lessons plans.

Skills and concepts describe the ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for health and physical education are fundamental to health literacy and build on prior learning.

The health and physical education program provides a connection to Kentucky's Learning Goals 3 (self-sufficient individuals) and Learning Goal 4 (responsible group member), which are included in Kentucky statue, but they are not included in the state's academic assessment program. These connections provide a comprehensive link between essential content, skills and abilities important to learning. In addition Learning Goal 5 (think and solve problems) and Learning Goal 6 (connect and integrate knowledge) are addressed in health and physical education.

All physical education courses taught in the state of Kentucky must be in compliance with the Federal Special Education Law and Title IX and shall not include practice for or participation in interscholastic athletics.

Big Idea: Personal Wellness (Health Education)

Wellness is maximum well-being or total health. Personal wellness is a combination of physical, mental, emotional, spiritual and social well-being. It involves making behavioral choices and decisions each day that promote an individual's physical well-being, the prevention of illnesses and diseases and the ability to remain, physically, mentally, spiritually, socially and emotionally healthy.

Academic Expectations

2.29 Students demonstrate skills that promote individual well-being and healthy family relationships.
2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.32 Students demonstrate strategies for becoming and remaining mentally and emotionally healthy.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
4.1 Students effectively use interpersonal skills.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- individuals have a responsibility to advocate for personal, family and community health.
- physical, social, emotional and mental changes occur during adolescence and throughout life.
- interactions with others are an integral part of the human life experience and contribute to healthy relationships.
- the environment, lifestyle, family history, peers and other factors impact physical, social, mental and emotional health.
- culture, values (e.g., individual, family and community) media and use of technology (e.g., television, computers, MP3 Players, electronic/arcade games) can influence personal behavioral choices.
- behavioral choices affect physical, mental, emotional and social well-being and can have positive or negative consequences on one's health.
- positive health habits can help prevent injuries and spreading of diseases to self and others.
- self-management and coping strategies can enhance mental and emotional health.
- a variety of resources are available to inform, treat and counsel individuals with physical, mental, social and emotional health needs.

Grade 8 Skills and Concepts – Personal and Physical Health

Students will

- evaluate communication methods used in advocating for personal, family and community health
- understand the importance of assuming responsibility for personal health behaviors:
  - predict how decisions regarding health behaviors have consequences for self and others
  - explain the benefits (preventing pregnancy, preventing HIV/STDs, maintaining self-esteem) and strategies (e.g., using refusal skills, talking with parents, doctors, counselors) of abstaining from sexual activity
- evaluate how an individual's behaviors and choices of diet, exercise and rest affect the body

Big Idea: Personal Wellness (Health Education) – Continued

Grade 8 Skills and Concepts – Growth and Development
Students will

- apply strategies and skills needed to obtain personal health goals during adolescence and describe the physical, social and emotional changes (e.g., growth spurts, peer influence, self-confidence, mood swings) that occur during adolescence
- explain basic structures and functions of the reproductive system as it relates to the human life cycle

Grade 8 Skills and Concepts – Social, Mental and Emotional Health
Students will

- demonstrate social interaction skills by:
  - using appropriate means to express needs, wants and feelings
  - using and explaining the importance of effective social interaction skills (e.g., respect, self-advocacy, cooperation, communication, identifying and being open to different perspectives and points of view, empathy, friendship)
  - recommending and justifying effective strategies (e.g., problem solving, decision making, refusal skills, anger management, conflict resolution) for responding to stress, conflict, peer pressure and bullying
  - interpreting how individuals impact the effective functioning of groups
- demonstrate the ability to apply a decision-making process to health issues and problems individually and collaboratively
- identify common social and emotional problems (aggression, anxiety, depression, grief) and describe self-management and coping strategies (goal setting, refusal skills, decision making and time management) for addressing these problems

Grade 8 Skills and Concepts – Family and Community Health
Students will

- analyze how personal health, health behaviors and use of health services can be influenced by:
  - family traditions/values
  - technology and media messages
  - cultural beliefs
  - physical, social and emotional environments
  - information from peers

Big Idea: Personal Wellness (Health Education) – Continued

Grade 8 Skills and Concepts – Communicable, Non-Communicable and Chronic Diseases Prevention
Students will

- demonstrate an understanding of diseases by:
  - describing symptoms, causes, patterns of transmission, prevention and treatments of communicable diseases (colds, flu, mononucleosis, hepatitis, HIV/STD, tuberculosis)
  - describing symptoms, causes, patterns of transmission, prevention and treatments of non-communicable diseases (cancer, cardiovascular disease, diabetes, obesity, asthma, emphysema)
  - investigate family history, environment, lifestyle and other risk factors related to the cause or prevention of disease and other health problems
- demonstrate an understanding of how to maintain a healthy body by:
  - analyzing how health is influenced by the interaction of body systems
  - describing ways pathogens from the environment (e.g., air, food, people) enter the body and explaining how body defenses fight pathogens
  - explaining how personal hygiene practices affect physical, mental/emotional and social health; explaining how personal health habits (e.g., hand washing, care of teeth and eyes, sun protection) affect self and others in the prevention and spread of disease
  - identifying health care providers and describing reasons for preventive care

Grade 8 Skills and Concepts – Alcohol, Tobacco and Other Drugs
Students will

- demonstrate an understanding of the use and misuse of alcohol, tobacco and other drugs by:
  - distinguishing between legal (e.g., over the counter, prescription drugs) and illegal drugs (e.g., inhalants, marijuana, stimulants, depressants) and describing how their usage affects the body systems
  - describing the immediate/long-term effects of alcohol, tobacco and illegal drug usage and analyzing their impact on health
  - describing resources available to individuals seeking treatment or counseling for negative behaviors or addictions

Big Idea: Nutrition (Health Education)

Proper nutrition is critical to good health. To maintain a healthy weight, good dietary habits and physical activity are essential. Nutritious foods are necessary for growth, development and maintenance of healthy bodies.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
3.2 Students will demonstrate the ability to maintain a healthy lifestyle.
3.5 Students will demonstrate self-control and self-discipline.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use decision-making process to make informed decisions among options.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- proper nutrition is essential to growth and development.
- nutrients have a role in the development of an individual's health.
- resources are available to assist in making nutritional choices.
- individuals, families and community values influence nutritional choices.

Grade 8 Skills and Concepts

Students will

- evaluate the role of nutrients and food sources in the growth and development of healthy bodies
- identify problems that occur from extreme eating behaviors (overeating, obesity, anorexia, bulimia)
- analyze factors (e.g., geography, family, cultural background, convenience, cost, advertising, friends, personal taste) that influence healthy food choices
- apply the decision-making process when analyzing resources needed in making dietary choices
- use print and non-print resources (e.g., Food Guide Pyramid (FGP), *Dietary Guidelines for Americans*, United States Department of Agriculture (USDA), National Dairy council), to make healthful food choices in real-life situations

Big Idea: Safety (Health Education)

Accidents are a major cause of injury and death to children and adolescents. Unintentional injuries involving motor vehicle, falls, drowning, fires, firearms and poisons can occur at home, school and work. Safe behavior protects a person from danger and lessens the effects of harmful situations.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
3.2 Students will demonstrate the ability to maintain a healthy lifestyle.
4.3 Students individually demonstrate consistent, responsive and caring behavior.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.1 Students use skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use a decision-making process to make informed decisions among-options.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- safety practices and procedures help to prevent injuries and provide a safe environment.
- community, state and federal resources are available to assist in hazardous situations.
- proper procedures must be used in emergency situations.

Grade 8 Skills and Concepts

Students will

- explain how health hazards (e.g., firearms, motorized vehicles, all terrain vehicles, personal water craft, potentially unsafe or threatening situations) and safety practices (e.g., walking in opposite direction of violence, staying calm in dangerous situations, wearing protective gear, notifying appropriate authority) may influence their personal health
- identify and describe potential hazards in and around the home and school explain how to prevent injuries
- demonstrate safety procedures needed for emergencies (e.g., weather, fire, tornado, lock down) at home or school
- recognize life threatening emergencies and explain how basic first-aid procedures for responding to a variety of life-threatening emergencies (e.g., falls, drowning, choking, bleeding, shock, poisons, burns, temperature-related emergencies, allergic reactions, broken bones) can help reduce the severity of injuries and save lives
- identify and access the available local, state and federal health and safety agencies (e.g., health departments, Center for Disease Control and Prevention (CDC), National Guard) and explain the services they provide
- use reliable safety resources and guidelines to help in avoiding injuries and dangerous situations (e.g., internet use, vehicles, firearms, watercraft)
- demonstrate communications skills needed in emergency situations
- explain safety practices needed when assuming responsibilities (babysitting, house-sitting, elderly care, pet care) in caring for animals, property and other individuals

Big Idea: Psychomotor Skills (Physical Education)

Cognitive information can be used to understand and enhance the development of motor skills such as movement sequences and patterns. Individuals who understand their bodies and how to perform various movements will be safer and more productive in recreation and work activities. Development of psychomotor skills contributes to the development of social and cognitive skills.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.34 Students perform physical movements skills effectively in a variety of settings.
2.35 Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.
4.1 Students effectively use interpersonal skills.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- movement concepts, principles, strategies and tactics apply to the learning and performance of physical activities.
- motor skills need to be refined, combined and varied in the development of specialized skills (e.g., serving, catching with a glove, dribbling, punting).

Grade 8 Skills and Concepts

Students will

- critique transitional motor skills and patterns to make recommendations for improvement
- selects appropriate practice procedures to learn and master skills and movement patterns
- analyze the principles of motor skill refinements (e.g. accuracy, technique, movement) have in skill development
- demonstrate increased competence in motor skills for individual, dual and team activities
- explore the use of non-locomotor, locomotor and combination skills in movement sequences, patterned dances, games and other activities
- refine techniques to achieve consistency in performance of fundamental manipulative skills (e.g., throwing, catching, kicking, dribbling, striking) for participation in games and activities
- demonstrate and explain how transitional motor skills are needed for participation in games, activities and rhythmic movements (e.g., baseball, soccer, dance, golf, basketball)

Big Idea: Lifetime Physical Wellness (Physical Education)

Lifetime wellness is health-focused. The health-related activities and content utilized are presented to help students become more responsible for their overall health status and to prepare each student to demonstrate knowledge and skills that promote physical activity throughout their lives. Physical education uses physical activity as a means to help students acquire skills, fitness, knowledge and attitudes that contribute to their optimal development and well-being. Physical, mental, emotional and social health is strengthened by regular involvement in physical activities.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.34 Students perform physical movements skills effectively in a variety of settings.
2.35 Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.
3.1 Students demonstrate positive growth in self-concept through appropriate tasks or projects.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
3.7 Students demonstrate the ability to learn on one's own.
4.2 Students use productive team membership skills.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- leisure/recreational or competitive physical activities provide opportunities for self-expression, social interactions and can be enjoyable and challenging.
- intrinsic values can be gained by regular participation in leisure/recreational or competitive activities.
- techniques, strategies and practice are important for improving performance of sport skills.
- adhering to rules and procedures, etiquette, cooperation and team work, ethical behavior and positive social interaction impacts the effective participation in sports and physical activities.
- regular participation in health-related, physical activity supports the goals of fitness and a healthier lifestyle throughout life.
- fitness principles and techniques are used to improve/maintain physical health.

Big Idea: Lifetime Physical Wellness (Physical Education) – Continued

Grade 8 Skills and Concepts
Students will

- design and implement a personal lifetime leisure/recreational plan that includes challenging and enjoyable physical activities
- examine and analyze the personal benefits derived from regular participation in leisure/recreational or competitive physical activities
- develop and implement an appropriate practice plan for skill proficiency in games and sports
- examine the relationship between and among effort, persistence, practice and improvement as they relate to skill development
- access and describe techniques (e.g., practice, lessons, videos, drills, peer/teacher review, self-evaluation) for improving performance in games and sports
- participate regularly in physical activity
- when participating in a variety of physical activities, sports and games:
    - identify and apply rules of behavior and fair play (e.g., accepting authoritative decisions, assessing one's own performance level, accepting skills and abilities of others through verbal and nonverbal actions for spectators and/or participants)
    - demonstrate sportsmanship, cooperation, teamwork and conflict resolution
    - identify and use safety principles, rules, procedures and etiquette
    - describe how offensive and defensive strategies are used in games and sports
- conduct a self-assessment which includes the elements and of the FITT Principle (Frequency, Intensity, Type, Time) and design a fitness plan based on assessment results
- compare and contrast lifetime activities (e.g., biking, dance, tennis, horseback riding, walking, golf) that improve or maintain the components of fitness (muscular strength, muscular endurance, flexibility, body composition, cardio-respiratory endurance)
- explain how the systems of the body (e.g., muscular, skeletal, nervous, respiratory, circulatory) affect an individual's personal fitness level
- explain the relationship of nutrition and exercise to physical fitness

MIDDLE LEVEL SCIENCE

Kentucky Core Academic Standards – Science – Sixth Grade

The science program in grade six incorporates opportunities for students to work and think like scientists as they apply abilities needed for scientific inquiry. These abilities include: (1) identifying questions that can be answered through scientific investigations, (2) designing and conducting scientific investigations, (3) using appropriate tools and techniques to gather, analyze and interpret data, (4) developing descriptions, explanations, predictions and models using evidence, (5) thinking critically and logically to uncover the relationships between evidence and explanations, (6) recognizing and analyzing alternative explanations and predictions, (7) communicating scientific procedures and explanations.

Students should have opportunities to work individually and in groups of varying size and composition in order to conduct investigations, process information and discuss/debate important scientific concepts. Students must have regular opportunities to share their ideas with others and to test questions they generate as a result of their learning experiences.

In our technologically advanced society, information gathering must extend beyond the classroom walls and must involve a variety of credible sources. Scientists also place a high value on accurate record keeping and open communication of findings. The science classroom should mirror this by emphasizing multiple, varied and consistent methods of documenting and communicating learning.

The scientific content standards at the sixth grade level are directly aligned with Kentucky's **Academic Expectations**. Science standards are organized around seven “Big Ideas” that are important to the discipline of science. These big ideas are: Structure and Transformation of Matter, Motion and Forces, The Earth and the Universe, Unity and Diversity, Biological Change, Energy Transformations and Interdependence. The Big Ideas are conceptual organizers for science and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of science. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for science are fundamental to scientific literacy, scientific inquiry and build on prior learning.

Effectively implementing the Kentucky Core Academic Standards requires a common understanding of some of the terms referenced throughout this document. These terms include:

> **Investigate/Explore-** compile a variety of information through hands-on experiences (utilizing process skills such as measuring, observing, questioning, classifying, predicting and inferring) and/or consult a variety of print and non-print media in order to formulate conclusions and/or gather evidence/data.

Experiment/Test- conduct a scientifically valid and controlled investigation, collecting and analyzing data. Use findings and conclusions to form logical explanations and openly share.

Research- consult of a variety of credible sources of information to gain knowledge, answer questions and support conclusions and explanations.

Model- represent a phenomenon or concept. Models are often conceptual in nature, and the term ‘model’ does not always imply a physical product.

Big Idea: Structure and Transformation of Matter (Physical Science)

A basic understanding of matter is essential to the conceptual development of other big ideas in science. During the middle years, physical and chemical changes in matter are observed, and students begin to relate these changes to the smaller constituents of matter—namely, atoms and molecules. The use of models (and an understanding of their scales and limitations) is an effective means of learning about the structure of matter. Looking for patterns in properties is also critical to comparing and explaining differences in matter.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- all matter is composed of parts that are too small to be seen without magnification.
- no matter how substances within a closed system interact with one another, or how they combine or break apart, the total weight of the system remains the same.
- chemical changes result in the formation of a substance that has different properties than the original substance.
- not all substances that are mixed together will chemically combine. Because of this, physical properties can be used to separate mixtures.
- new ideas in science sometimes spring from unexpected findings, and they usually lead to new investigations.

Grade 6 Skills and Concepts

Students will

- use hand lenses and microscopes to investigate substances composed of particles too small to be seen without magnification
- use observations and evidence to describe and verify chemical changes in matter
- classify changes in substances as physical or chemical changes
- distinguish between mixtures and compounds
- explain how or why mixtures can be separated using physical properties, and investigate strategies for separating mixtures
- explore the feasibility of various procedures for separating mixtures, taking into account constraints such as availability and properties of materials, safety, economic and ethical issues
- investigate how important scientific advances have resulted from unexpected observations or experimental results
- plan, present and support information from investigations using a variety of modes

Big Idea: Motion and Forces (Physical Science)

Whether observing airplanes, baseballs, planets, or people, the motion of all bodies is governed by the same basic rules. At the middle level, qualitative descriptions of the relationship between forces and motion will provide the foundation for quantitative applications of Newton's Laws.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- friction is a force that turns the energy of motion into heat, causing moving objects to eventually slow or stop unless additional force (energy) is added.
- when any force acts on an object, the change in speed or direction depends on the size and direction of the force.
- mechanical systems must be designed to take forces such as friction into account. Friction and/or the heat produced by it can have significant effects on the system.

Grade 6 Skills and Concepts

Students will

- use observations and appropriate tools (e.g., timer, meter stick, balance, spring scale) to document the position and motion of objects
- use graphical and observational data to make inferences, predictions and draw conclusions about the motion of an object as related to the mass or force involved
- observe real-life phenomena to discover the effects of friction on moving objects and mechanical systems
- represent the motion of objects and their response to unbalanced forces in a variety of ways

Big Idea: The Earth and the Universe (Earth/Space Science)

The Earth system is in a constant state of change. These changes affect life on Earth in many ways. Development of conceptual understandings about processes that shape the Earth begin at the elementary level with understanding what Earth materials are and that change occurs. At the middle level, students investigate how these changes occur. An understanding of systems and their interacting components will enable students to evaluate supporting theories of Earth changes. The use of models and observance of patterns to explain common phenomena is essential to building a conceptual foundation and supporting ideas with evidence at all levels. In middle school, students begin to look beyond what can be directly observed as they explore the Earth-sun-moon system, as well as the rest of our solar system, employing the concept of scale within their models. Patterns play an important role as students seek to develop a conceptual understanding of gravity in their world and in the universe.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- regular and predictable movements of the sun, moon and Earth are responsible for many observed phenomena on Earth, (e.g. day/night, year, moon phases, eclipses). The regular patterns of these phenomena can be predicted using data or models.
- the total amount of material that makes the solid Earth is relatively constant (excluding impacts), even though rocks and minerals often change properties through a variety of processes that transform them (rock cycle).
- the Earth's surface is not uniform due to a number of constructive and destructive forces that constantly reshape it. The past effects of these processes can be inferred, and the data these inferences are based upon can also be used to predict future changes.
- complex systems like the Earth or solar system are difficult to comprehend or explain without depending on averages and ranges of data. Technology is essential for helping to collect and analyze this data.

Grade 6 Skills and Concepts

Students will

- use observations, models and evidence to explain the cause and effect relationships in the rock cycle and to make predictions about constantly changing Earth materials
- investigate, create and identify the limitations of models which can be used to substantiate and predict the actual results (e.g. moon phases, seasons, eclipses) of the interactions of the sun, moon and Earth
- investigate constructive and destructive forces at work on the Earth's surface and the landforms that result from them
- research how scientists organize data from complex systems and also how technology enables/enhances scientific research and data analysis

Big Idea: Unity and Diversity (Biological Science)

All matter is comprised of the same basic elements, goes through the same kinds of energy transformations, and uses the same kinds of forces to move. Living organisms are no exception. In middle school, students begin to compare, contrast, and classify the microscopic features of organisms—the cells, as well as investigate reproduction as the essential process to the continuation of all species. Expected patterns of genetic traits are predicted. Distinctions are made between learned behaviors and inherited traits. Emphasis at every level should be placed upon the understanding that while every living thing is composed of similar small constituents that combine in predictable ways, it is the subtle variations within these small building blocks that account for both the likenesses and differences in form and function that create the diversity of life.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- cells are the fundamental units that perform the basic functions needed to sustain life. Some organisms contain only a single cell, while others may have many millions of specialized cells grouped together in cooperative systems with specific functions (tissues and/or organs).
- every cell within an organism contains all of the information needed to completely replicate that organism, regardless of the function that cell performs.
- although plants and animals exhibit a great variety in body structures that contribute to their survival and reproduction, the basic way that individual cells function is similar in all living organisms.
- the behavior of an organism can be influenced by both heredity and experiences. The relative influence of these factors can be inferred by careful observation/data collection over a period of time.
- the great diversity of life is a result of many factors, both internal and external to organisms.
- even the most different of organisms are fundamentally more alike than different. Their seemingly great differences conceal the great similarities apparent at the cellular level.
- classification systems do not exist in nature, but are created by scientists to describe the vast diversity of organisms, frame research questions and suggest relationships among living things.

Grade 6 Skills and Concepts

Students will

- obtain information from observations, models and other sources to explain the functions of cells necessary to sustain life
- use scientific tools (e.g., microscope) to observe and describe unicellular and multi-cellular organisms and the specialized cells they contain
- describe and represent (e.g. construct a chart, diagram, or graphic organizer) relationships between and among levels of organization for structure and function, including cells, tissues, organs, organ systems, organisms (e.g., bacteria, protists, fungi, plants, animals) and ecosystems
- design and conduct scientific investigations to make inferences about factors influencing the behavior of organisms, and compare the results with those of investigations done by others
- investigate the relative influence of heredity and experience on the behavior of organisms
- identify and describe the cellular structures that allow for replication/reproduction
- classify organisms into simple categories and discuss the limitations of classification systems

Big Idea: Biological Change (Biological Science)

The only thing certain is that everything changes. At the middle school level, students study relationships among populations and ecosystems that contribute to the success or demise of a specific population or species. Students construct basic explanations that can account for the great diversity among organisms.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.

2.6 Students understand how living and nonliving things change over time and the factors that influence the changes.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- small differences between parents and offspring result in future generations that are very different from their ancestors.
- sensing and controlling internal processes in response to the external environment are essential for an organism's survival, regardless of how simple or complex it is.
- scientists vary widely in what they study and how they do their work. While there is no fixed set of steps they follow, the basic process of science involves collecting relevant evidence, logical reasoning and the use of imaginative thinking in constructing explanations for what they observe.

Grade 6 Skills and Concepts

Students will

- investigate how small differences between parents and offspring can accumulate over time, eventually resulting in a wide variety of types of organisms with different characteristics from their different ancestors
- explain how various organisms sense (e.g. hunger, fatigue, temperature awareness) and control their internal environments (e.g. fat metabolism, adrenaline release, perspiration) and how this contributes to their survival
- identify current research topics in biological sciences and identify the means/processes scientists are using to generate data about them
- explain how the basic ideas of scientific investigation remain the same regardless of the field of study
- generate questions about the diversity of species, then collect information from a variety of sources to formulate explanations supported by scientific evidence

Big Idea: Energy Transformations (Unifying Concepts)

Energy transformations are inherent in almost every system in the universe—from tangible examples at the elementary level, such as heat production in simple Earth and physical systems to more abstract ideas beginning at middle school, such as those transformations involved in the growth, dying and decay of living systems. The use of models to illustrate the often invisible and abstract notions of energy transfer will aid in conceptualization, especially as students move from the macroscopic level of observation and evidence (primarily elementary school) to the microscopic interactions at the atomic level (middle and high school levels).

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- oceans have a major effect on climate, because water in the oceans holds a large amount of heat.
- several Earth systems and processes occur primarily because of the constant influx of solar energy.
- seasons are a result of the interaction of the tilt of the Earth's axis relative to its orbital path.
- energy, in the form of sunlight, is transformed by a chemical reaction in plant cells (photosynthesis) to form essential nutrients for the plant to live and grow.
- inside a closed system, the temperature increases or decreases as heat energy is added or removed.
- the Earth is a complex system of energy transformations, materials and processes. Understanding the whole requires first understanding individual subsystems and their interactions.

Grade 6 Skills and Concepts

Students will

- model and explain why some locations on Earth have seasons
- identify Earth processes influenced by energy from the sun (e.g. water cycle, nitrogen cycle, photosynthesis) and describe the sun's role in those processes
- explain the cause and effect relationships between oceans and climate and describe the predictable patterns that result
- describe the role of photosynthesis in energy storage within plants
- experimentally investigate the relationship between temperature and heat transfer in closed systems

Big Idea: Interdependence (Unifying Concepts)

It is not difficult for students to grasp the general notion that species depend on one another and on the environment for survival. But their awareness must be supported by knowledge of the kinds of relationships that exist among organisms, the kinds of physical conditions that organisms must cope with, the kinds of environments created by the interaction of organisms with one another and their physical surroundings, and the complexity of such systems. In middle school, students should be guided from specific examples of the interdependency of organisms to a more systematic view of the interactions that take place among organisms and their surroundings. Students growing understanding of systems in general will reinforce the concept of ecosystems. Stability and change in ecosystems can be considered in terms of variables such as population size, number and kinds of species, productivity, and the effect of human intervention.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- ecosystems are more than just the organisms they contain: geography, weather, climate and geologic factors also influence the interactions within an ecosystem.
- communities do not exist in isolation, but are globally interconnected by a number of Earth systems (e.g. ocean, atmosphere, lithosphere).
- science can sometimes be used to inform ethical decisions by identifying the likely consequences of an action, but cannot be used to establish if taking that action would be right or wrong.

Grade 6 Skills and Concepts

Students will

- describe and explore the biotic and abiotic factors that affect change in ecosystems
- document and describe consequences of change in one or more abiotic factors on a population within an ecosystem
- investigate how communities are interconnected, how they interact with different Earth systems, and represent these global connections/interactions in a variety of ways (e.g. writing, models, multi-media, claymation)
- differentiate the usefulness of scientific research to predict the possible consequences of decisions about environmental issues from its limitations in making ethical/moral decisions about those issues

Kentucky Core Academic Standards – Science – Seventh Grade

The science program in grade seven incorporates opportunities for students to work and think like scientists as they apply abilities needed for scientific inquiry. These abilities include: (1) identifying questions that can be answered through scientific investigations, (2) designing and conducting scientific investigations, (3) using appropriate tools and techniques to gather, analyze and interpret data, (4) developing descriptions, explanations, predictions and models using evidence, (5) thinking critically and logically to uncover the relationships between evidence and explanations, (6) recognizing and analyzing alternative explanations and predictions, (7) communicating scientific procedures and explanations.

Students should have opportunities to work individually and in groups of varying size and composition in order to conduct investigations, process information and discuss/debate important scientific concepts. Students must have regular opportunities to share their ideas with others and to test questions they generate as a result of their learning experiences.

In our technologically advanced society, information gathering must extend beyond the classroom walls and must involve a variety of credible sources. Scientists also place a high value on accurate record keeping and open communication of findings. The science classroom should mirror this by emphasizing multiple, varied and consistent methods of documenting and communicating learning.

The scientific content standards at the seventh grade level are directly aligned with Kentucky's **Academic Expectations**. Science standards are organized around seven “Big Ideas” that are important to the discipline of science. These big ideas are: Structure and Transformation of Matter, Motion and Forces, The Earth and the Universe, Unity and Diversity, Biological Change, Energy Transformations and Interdependence. The Big Ideas are conceptual organizers for science and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of science. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for science are fundamental to scientific literacy, scientific inquiry and build on prior learning.

Effectively implementing the Kentucky Core Academic Standards requires a common understanding of some of the terms referenced throughout this document. These terms include:

> **Investigate/Explore-** compile a variety of information through hands-on experiences (utilizing process skills such as measuring, observing, questioning, classifying, predicting and inferring) and/or consult a variety of print and non-print media in order to formulate conclusions and/or gather evidence/data.

Experiment/Test- conduct a scientifically valid and controlled investigation, collecting and analyzing data. Use findings and conclusions to form logical explanations and openly share.

Research- consult of a variety of credible sources of information to gain knowledge, answer questions and support conclusions and explanations.

Model- represent a phenomenon or concept. Models are often conceptual in nature, and the term ‘model’ does not always imply a physical product.

Big Idea: Structure and Transformation of Matter (Physical Science)

A basic understanding of matter is essential to the conceptual development of other big ideas in science. During the middle years, physical and chemical changes in matter are observed, and students begin to relate these changes to the smaller constituents of matter—namely, atoms and molecules. The use of models (and an understanding of their scales and limitations) is an effective means of learning about the structure of matter. Looking for patterns in properties is also critical to comparing and explaining differences in matter.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- equal volumes of different substances usually have different weights.
- there are only 92 naturally occurring elements and all matter is made of some combination of them (compounds).
- elements, as well as compounds, can be classified according to their similar properties, including how they react with each other and how they may be used. The patterns, which allow classification, can be used to infer or understand real life applications for those substances.
- many factors influence reaction rates, such as temperature, acidity and concentration.
- investigations are conducted for different reasons, including to explore new phenomena, to check on previous results, to test how well a theory predicts, and to compare different theories.

Grade 7 Skills and Concepts

Students will

- compare the physical and chemical properties of a variety of substances, including examples of solids, liquids and gases
- distinguish between elements and compounds and classify them according to their properties
- generate investigable questions and conduct experiments or non-experimental research to address them
- observe reactions between substances that produce new substances very different from the reactants
- test factors that influence reaction rates
- explore real-life applications of a variety of elements and compounds and communicate findings in an authentic form (transactive writing, public speaking, multimedia presentations)

Big Idea: Motion and Forces (Physical Science)

Whether observing airplanes, baseballs, planets, or people, the motion of all bodies is governed by the same basic rules. At the middle level, qualitative descriptions of the relationship between forces and motion will provide the foundation for quantitative applications of Newton's Laws.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- an object remains at rest or maintains a constant speed and direction of motion unless an unbalanced force acts on it (inertia).
- forces acting against each other can be balanced, canceling each other out and having no net effect.
- gravity is an attractive force created by mass. All objects are attracted to each other by gravity, but this attraction is easy to see only when at least one of the objects has a large mass.
- technology used to gather data enhances accuracy and allows scientists to analyze and quantify results of investigations.

Grade 7 Skills and Concepts

Students will

- use appropriate tools and technology (e.g., timer, meter stick, balance, spring scale) to investigate the position, speed and motion of objects
- test the cause and effect relationship between straight-line motion and unbalanced forces
- investigate balanced and unbalanced forces and their effect on objects and their motion
- make inferences and draw conclusions about the motion of objects, and predict changes in position and motion as related to the mass or force
- calculate work as the product of force and distance moved in the direction of the force
- identify gravity as a force that acts over a distance, and distinguish it from other forces that do the same (e.g. magnetism)
- investigate the properties of gravity and observe its effects on objects
- distinguish between weight (as a function of gravity) and mass (matter content) of an object
- explore the impact of technology on measurement by making measurements with tools of varying precision, comparing the results and predicting possible impacts that variation in measurements might have in real-life investigations

Big Idea: The Earth and the Universe (Earth/Space Science)

The Earth system is in a constant state of change. These changes affect life on Earth in many ways. Development of conceptual understandings about processes that shape the Earth begin at the elementary level with understanding *what* Earth materials are and that change occurs. At the middle level, students investigate *how* these changes occur. An understanding of systems and their interacting components will enable students to evaluate supporting theories of Earth changes. The use of models and observance of patterns to explain common phenomena is essential to building a conceptual foundation and supporting ideas with evidence at all levels. In middle school, students begin to look beyond what can be directly observed as they explore the Earth-sun-moon system, as well as the rest of our solar system, employing the concept of scale within their models. Patterns play an important role as students seek to develop a conceptual understanding of gravity in their world and in the universe.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- regular and predictable movement is not limited to our solar system. New technologies, coupled with an understanding of the laws of motion, allow for the discovery of celestial bodies that cannot be directly observed.
- our solar system is part of a larger collection of millions of stars (Milky Way Galaxy), any of which may be the center of its own system of orbiting planets.
- gravitational interactions within the Earth, sun and moon system impact phenomena and organisms on the surface of the Earth.
- models of the interior of the Earth have been constructed primarily from inferences based on limited data obtained during earthquakes and volcanic eruptions. These models are useful, but are open to revision or rejection as new information is obtained.
- the Earth's layers vary widely in their properties, and interactions between them can manifest themselves in ways that impact both the Earth and its organisms.
- while some changes to the Earth occur without warning, many changes to the surface or atmosphere can be predicted from available data/evidence.

Grade 7 Skills and Concepts

Students will

- research how the laws of motion have been (and are still) used to make predictions about the movement of planets and satellites
- describe the effects of gravity on the movements and interactions of the Earth, sun and moon
- investigate the structure of the galaxy and the Earth's place within it
- analyze the evidence used to infer the composition of the Earth's interior and evaluate the models based upon that evidence
- model the layers of the Earth, explain interactions between them and describe potential results of those interactions
- investigate the forces and processes that change Earth's surface or atmosphere and analyze data to generate predictions of their effects

Big Idea: Unity and Diversity (Biological Science)

All matter is comprised of the same basic elements, goes through the same kinds of energy transformations, and uses the same kinds of forces to move. Living organisms are no exception. In middle school, students begin to compare, contrast, and classify the microscopic features of organisms—the cells, as well as investigate reproduction as the essential process to the continuation of all species. Expected patterns of genetic traits are predicted. Distinctions are made between learned behaviors and inherited traits. Emphasis at every level should be placed upon the understanding that while every living thing is composed of similar small constituents that combine in predictable ways, it is the subtle variations within these small building blocks that account for both the likenesses and differences in form and function that create the diversity of life.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- specialized structures called genes are located in the chromosomes of each living cell. These structures have the task of passing on characteristics that make offspring resemble their parents (heredity).
- inherited traits of an offspring come directly from the genes of the parent, while learned traits are acquired after birth through interactions with the offspring's surroundings.
- asexual reproduction involves only the passing on of one parent's genes, resulting in offspring with genes identical to those of the parent. Sexual reproduction requires the combination of genes from male and female sex cells, creating offspring with a blend of traits.
- sexual reproduction creates variations among offspring, gradually contributing to a wide variety of life.
- the observable differences among humans are minor compared to their internal similarity, as evidenced by the ability of people from all over the world to physically mix through reproduction, blood transfusions and organ transplants.
- research involving living things requires ethical considerations not required when investigating non-living things. Human subjects must be fully informed about potential risks and freely consent to any involvement. Because animals cannot make their own choices, special care must be taken in using them in scientific research.

Grade 7 Skills and Concepts

Students will

- describe and compare sexual and asexual reproduction, including advantages and disadvantages of each
- research and describe the role of genes/chromosomes in the passing of information from one generation to another (heredity)
- describe the differences between learned and inherited behaviors and characteristics, and classify examples of each using tables, graphs or diagrams
- research variations within species that result from sexual reproduction
- compare the physiological similarities among people from geographically and culturally diverse origins
- support and/or defend a position related to the ethical considerations of scientific research involving humans and other organisms, both orally and in writing

Big Idea: Biological Change (Biological Science)

The only thing certain is that everything changes. At the middle school level, students study relationships among populations and ecosystems that contribute to the success or demise of a specific population or species. Students construct basic explanations that can account for the great diversity among organisms.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.

2.6 Students understand how living and nonliving things change over time and the factors that influence the changes.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- over time, some species have become so adapted to each other that neither could survive without the other.
- most of the species that have lived on Earth no longer exist. A species will become extinct when changes in environmental conditions (either gradual or rapid) are greater than its ability to adapt.
- fossils provide evidence of how biological change over time accounts for the diversity of species developed through gradual processes over many generations.
- results of scientific investigations are seldom exactly the same, but if the differences are large it is important to try to figure out why. Keeping careful records is important to help investigate what might have caused the differences.

Grade 7 Skills and Concepts

Students will

- investigate parasitic and symbiotic relationships among organisms
- explore the environmental factors that have resulted in the extinction of species
- use information from the fossil record to investigate changes in organisms and their environments to make inferences about past life forms and environmental conditions
- compare the results from a variety of investigations (based on similar hypotheses) to identify differences between their outcomes/conclusions and propose reasonable explanations for those discrepancies

Big Idea: Energy Transformations (Unifying Concepts)

Energy transformations are inherent in almost every system in the universe—from tangible examples at the elementary level, such as heat production in simple Earth and physical systems to more abstract ideas beginning at middle school, such as those transformations involved in the growth, dying and decay of living systems. The use of models to illustrate the often invisible and abstract notions of energy transfer will aid in conceptualization, especially as students move from the macroscopic level of observation and evidence (primarily elementary school) to the microscopic interactions at the atomic level (middle and high school levels).

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- most of the energy that powers the Earth's systems comes from the sun. Energy from inside the Earth, however, is responsible for some important phenomena (volcanism, plate tectonics).
- the amount of energy in a closed system remains the same, so that the energy lost by a hot object equals the energy gained by a cold one.
- all energy must have a source and may change forms or be transferred in a wide variety of ways, including via waves.
- thermal energy and motion are inseparable when viewed at the molecular level.
- the role various organisms play within an ecosystem can be determined by observing the flow of energy between them.
- systems tend to change until they become stable and remain that way unless conditions change.

Grade 7 Skills and Concepts

Students will

- investigate a variety of Earth systems that are powered by solar (e.g. water cycle, climate, carbon cycle) and/or geothermal (e.g. plate tectonics, volcanism) energy
- model, explain and analyze the flow of energy in ecosystems and draw conclusions about the role of organisms in an ecosystem
- explain where energy comes from (and goes next) in a variety of real-world examples (e.g. burning, respiration, residential lighting, dry cell batteries) involving different forms of energy (e.g. heat, light, kinetic, chemical)
- identify forms of energy that are transferred via waves
- equate work done on an object with change in energy of the object
- describe the kinetic molecular theory of matter
- experiment with heat flow inside closed and open systems to explore the concept of thermal equilibrium

Big Idea: Interdependence (Unifying Concepts)

It is not difficult for students to grasp the general notion that species depend on one another and on the environment for survival. But their awareness must be supported by knowledge of the kinds of relationships that exist among organisms, the kinds of physical conditions that organisms must cope with, the kinds of environments created by the interaction of organisms with one another and their physical surroundings, and the complexity of such systems. In middle school, students should be guided from specific examples of the interdependency of organisms to a more systematic view of the interactions that take place among organisms and their surroundings. Students growing understanding of systems in general will reinforce the concept of ecosystems. Stability and change in ecosystems can be considered in terms of variables such as population size, number and kinds of species, productivity, and the effect of human intervention.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- species may become extinct even if environmental conditions remain constant. Competition between species for limited resources can result in extinction.
- changes within an ecosystem may be caused by the interactions of many factors, both biotic and abiotic. Seemingly small changes can have significant consequences as their effects ripple through a community.
- not all actions/decisions have the possibility of a desirable outcome. Sometimes a compromise requires accepting one unwanted outcome to avoid a different unwanted outcome.

Grade 7 Skills and Concepts

Students will

- research and investigate environmental situations where small changes may have large impacts in both living and non-living components of systems (e.g., introduction of zebra mussels into the Kentucky river, planting kudzu to stabilize hillsides)
- investigate potential factors contributing to endangerment or extinction, including the effects of competition for resources
- identify a species which has become extinct and analyze data/evidence to infer the contributing factors which led to extinction
- research and discuss environmental impacts of actions (human or non-human) which necessitate choosing between undesirable alternatives (e.g., losing crops to insects vs. applying toxic pesticides)
- design and conduct investigations of changes to abiotic and biotic factors in ecosystems, document and communicate observations, procedures, results and conclusions

Kentucky Core Academic Standards – Science – Eighth Grade

The science program in the eighth grade should provide opportunities for students to think and work like scientists. Applying factual knowledge in real-world scientific contexts allows students to refine the abilities that are the basis of scientific inquiry. These abilities include: (1) identifying questions and concepts that guide scientific investigations, (2) designing and conducting scientific investigations, (3) using technology and mathematics to improve investigations and communications, (4) formulating and revising scientific explanations and models using logic and evidence, (5) recognizing and analyzing alternative explanations and models and (6) communicating and defending a scientific argument.

Students should have opportunities to work individually and in groups of varying size and composition in order to conduct investigations, process information and discuss/debate important scientific concepts. Students must have regular opportunities to share their ideas with others and to test questions they generate as a result of their learning experiences.

In our technologically advanced society, information gathering must extend beyond the classroom walls and must involve a variety of credible sources. Scientists also place a high value on accurate record keeping and open communication of findings. The science classroom should mirror this by emphasizing multiple, varied and consistent methods of documenting and communicating learning.

The scientific content standards at the eighth grade level are directly aligned with Kentucky's **Academic Expectations**. Science standards are organized around seven “Big Ideas” that are important to the discipline of science. These big ideas are: Structure and Transformation of Matter, Motion and Forces, The Earth and the Universe, Unity and Diversity, Biological Change, Energy Transformations and Interdependence. The Big Ideas are conceptual organizers for science and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of science. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for science are fundamental to scientific literacy, scientific inquiry and build on prior learning.

In order to effectively implement the Kentucky Core Academic Standards, teachers must have a common understanding of some of the terms referenced throughout this document;

> **Investigate/Explore-** compile a variety of information through hands-on experiences (utilizing process skills such as measuring, observing, questioning, classifying, predicting and inferring) and/or consult a variety of print and non-print media in order to formulate conclusions and/or gather evidence/data.

Experiment/Test- conduct a scientifically valid and controlled investigation, collecting and analyzing data. Use findings and conclusions to form logical explanations and openly share.

Research- consult of a variety of credible sources of information to gain knowledge, answer questions and support conclusions and explanations.

Model- represent a phenomenon or concept. Models are often conceptual in nature, and the term ‘model’ does not always imply a physical product.

Big Idea: Structure and Transformation of Matter (Physical Science)

A basic understanding of matter is essential to the conceptual development of other big ideas in science. During the middle years, physical and chemical changes in matter are observed, and students begin to relate these changes to the smaller constituents of matter—namely, atoms and molecules. The use of models (and an understanding of their scales and limitations) is an effective means of learning about the structure of matter. Looking for patterns in properties is also critical to comparing and explaining differences in matter.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- all matter is made of tiny moving particles called atoms, which are far too small to see directly through a microscope. The atoms of any element are alike but are different from atoms of other elements.
- because atomic structure is not directly observable, models (physical and conceptual) are used to facilitate understanding. What kind of model to use and how complex it should be depends on its purpose.
- elements do not break down during chemical reactions (e.g., heating, exposure to electric currents, reaction with acids).
- the idea of atoms explains the conservation of matter: If the number of atoms stays the same no matter how they are rearranged, then their total mass stays the same. The atoms that are present today are the same atoms that have always existed.
- there are groups of elements that have similar properties, including highly reactive metals, less-reactive metals, highly reactive nonmetals (such as chlorine, fluorine and oxygen) and some almost completely non-reactive gases (such as helium and neon). Some elements don't fit into any of the categories; among them are carbon and hydrogen, essential elements of living matter.
- over a long time, matter is transferred from one organism to another repeatedly and between organisms and their physical environment. As in all material systems, the total amount of matter remains constant, even though its form and location change.

Grade 8 Skills and Concepts

Students will

- classify substances by how they react in given situations
- analyze models/representations of elements and basic atomic structure
- describe and illustrate the movement of elements between organisms and their physical environment and within the Earth system
- analyze factors that may influence the movement of elements among the solid Earth, oceans, atmosphere and organisms
- investigate the relationship between the seemingly indestructible nature of the atom and the concept of conservation of matter

Big Idea: Motion and Forces (Physical Science)

Whether observing airplanes, baseballs, planets, or people, the motion of all bodies is governed by the same basic rules. At the middle level, qualitative descriptions of the relationship between forces and motion will provide the foundation for quantitative applications of Newton's Laws.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- Isaac Newton developed a set of rules that can be used to describe and predict virtually all observed motion on Earth and in the universe. These Laws of Motion demonstrate that the rules governing the Earth are the same as those controlling the rest of the observed universe.
- preconceived expectations can influence what people actually observe, preventing them from detecting other results. In order to maintain objectivity, different investigators should investigate the same question independently. For example, Newton's Laws are widely accepted because they have been verified by so many different observers.

Grade 8 Skills and Concepts

Students will

- differentiate speed and acceleration and classify real-life examples of each
- explain and experimentally verify how Newton's Laws show that forces between objects affect their motion, allowing future positions to be predicted from their present speeds and positions
- investigate motion of objects to generate and experimentally test predictions/conclusions. Compare and critique the results of others for accuracy, identifying strengths and weaknesses in the experiment, insisting on the use of evidence to support decisions

Big Idea: The Earth and the Universe (Earth/Space Science)

The Earth system is in a constant state of change. These changes affect life on Earth in many ways. Development of conceptual understandings about processes that shape the Earth begin at the elementary level with understanding what Earth materials are and that change occurs. At the middle level, students investigate how these changes occur. An understanding of systems and their interacting components will enable students to evaluate supporting theories of Earth changes. The use of models and observance of patterns to explain common phenomena is essential to building a conceptual foundation and supporting ideas with evidence at all levels. In middle school, students begin to look beyond what can be directly observed as they explore the Earth-sun-moon system, as well as the rest of our solar system, employing the concept of scale within their models. Patterns play an important role as students seek to develop a conceptual understanding of gravity in their world and in the universe.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- the Earth is almost unimaginably old when viewed on a human time scale, and some processes that shape it are happening so slowly they cannot be easily detected in a lifetime. The accepted age of our Earth and solar system (4.6 billion years) is based on a wide variety of data collected by a number of different methods.
- heat flow and movement of molten rock within the interior of the Earth results in crustal changes such as earthquakes, volcanoes and continental drift.
- a model cannot represent a full-scale phenomenon with complete accuracy, even if it only addresses very few attributes of the original.

Grade 8 Skills and Concepts

Students will

- research and evaluate the geological dating techniques that were used to determine the accepted age of the Earth
- identify a variety of landforms on the Earth's surface that have undergone changes (both fast and slow) and investigate the forces responsible for those changes
- observe convection currents in liquids and model the movement of molten rock within the Earth in order to explain how internal heat is transferred
- discuss and identify the strengths and limitations of a variety of physical and conceptual scientific models

Big Idea: Unity and Diversity (Biological Science)

All matter is comprised of the same basic elements, goes through the same kinds of energy transformations, and uses the same kinds of forces to move. Living organisms are no exception. In middle school, students begin to compare, contrast, and classify the microscopic features of organisms—the cells, as well as investigate reproduction as the essential process to the continuation of all species. Expected patterns of genetic traits are predicted. Distinctions are made between learned behaviors and inherited traits. Emphasis at every level should be placed upon the understanding that while every living thing is composed of similar small constituents that combine in predictable ways, it is the subtle variations within these small building blocks that account for both the likenesses and differences in form and function that create the diversity of life.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- all cells contain specialized parts that are structured to efficiently perform the cell's essential functions.
- complex organisms can exist because their genes contain the information needed to create and reproduce cells with specialized functions.
- organisms have nervous systems that allow them to react to changes in their surroundings and within themselves. Some of their reactions (e.g. pain response) are determined genetically while others (e.g. pushing a button to obtain food) are learned.
- patterns (e.g. reproductive method, number of body segments, type of skeleton) are helpful in classifying organisms based on how they are related. Science considers details of internal and external structures to be more important than behavior or general appearance.
- technological advances have made it possible for humans to alter the natural world. Ethical considerations and the probability of unintended consequences make it essential that the potential risks and rewards of any scientific endeavor be carefully considered before proceeding.

Grade 8 Skills and Concepts

Students will

- investigate, model and explain the functions of the specialized parts within the cell
- identify patterns of behavior within populations and classify them as either innate or learned
- investigate how the nervous systems of various organisms allow them to react (e.g. vomiting, avoidance) to internal (e.g., food toxins) and external (e.g., predator encounter) stimuli
- describe the role of genes/chromosomes in the passing of information from one generation to another (heredity)
- identify patterns among organisms that may be used for classification and compare those patterns to the currently accepted taxonomy
- collect and analyze information to answer questions about factors influencing heredity and learned behaviors and explain how scientific knowledge has been modified as new information is revealed
- research and discuss the impact of technological advances, and explore the ethical questions they often create

Big Idea: Biological Change (Biological Science)

The only thing certain is that everything changes. At the middle school level, students study relationships among populations and ecosystems that contribute to the success or demise of a specific population or species. Students construct basic explanations that can account for the great diversity among organisms.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.

2.6 Students understand how living and nonliving things change over time and the factors that influence the changes.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- thousands of layers of sedimentary rock provide evidence for the long history of the Earth and the long history of changing life forms whose remains are found in the rocks. More recently deposited rock layers contain fossils that more closely resemble existing species.
- observations of the fossil record provide evidence that helps to explain why externally diverse organisms are so similar at the molecular level.
- scientists cannot always control experimental conditions to obtain evidence. When that is not possible, they try to observe as wide a range of natural occurrences as possible to be able to identify patterns.

Grade 8 Skills and Concepts

Students will

- explore the law of superposition and the processes of fossilization in sedimentary rock
- synthesize evidence from the fossil record with information about currently-existing species to make inferences about why the similarities of diverse species extend beyond superficial comparisons
- research the most common fossils used to support theories of biological change
- apply research to answer student-generated questions through deductive reasoning about factors that may impact diversity of species

Big Idea: Energy Transformations (Unifying Concepts)

Energy transformations are inherent in almost every system in the universe—from tangible examples at the elementary level, such as heat production in simple Earth and physical systems to more abstract ideas beginning at middle school, such as those transformations involved in the growth, dying and decay of living systems. The use of models to illustrate the often invisible and abstract notions of energy transfer will aid in conceptualization, especially as students move from the macroscopic level of observation and evidence (primarily elementary school) to the microscopic interactions at the atomic level (middle and high school levels).

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- energy can be transferred in many ways, but it can neither be created nor destroyed.
- a steady supply of energy is essential for our society, but every source of energy has potential problems as well as benefits. Not all forms of energy are practical to use given our current state of technology.
- solar energy influences global climate in a number of direct and indirect ways. Patterns of global climate can be determined through analysis of climatic data.
- although many forms of energy exist, they can all be classified as either kinetic energy, potential energy, or energy contained within a field.
- the interaction of waves with matter provides the vehicle for a number of important types of energy transfer.
- changes that occur to any one component of an ecosystem may influence the entire system, since all of the components are interrelated. The relationships that exist can be determined by observing the flow of energy.
- many systems contain feedback mechanisms that serve to keep changes within specified limits.

Grade 8 Skills and Concepts

Students will

- explain the law of conservation of energy and infer where energy goes in a number of real-life energy transformations
- identify the energy transformations that occur in the ‘production’, transmission and use of energy by people in everyday life (e.g., electric power, automotive fuels, food)
- illustrate examples of potential and kinetic energy in everyday life, such as objects at rest, geologic fault movement and falling water
- compare a variety of energy sources (e.g., biomass, fission, fusion, ethanol) and evaluate their potential for large-scale use, as well as their benefits, risks and limitations
- classify methods of heat transfer (convection, conduction, radiation) and forms of energy (kinetic, potential, energy contained within a field)
- model energy transfer via waves and identify real-life examples
- analyze multiple sources of data to identify global climate patterns
- graphically represent energy flow within an ecosystem to identify the existing relationships
- analyze ecosystems to identify the factors that determine carrying capacities

Big Idea: Interdependence (Unifying Concepts)

It is not difficult for students to grasp the general notion that species depend on one another and on the environment for survival. But their awareness must be supported by knowledge of the kinds of relationships that exist among organisms, the kinds of physical conditions that organisms must cope with, the kinds of environments created by the interaction of organisms with one another and their physical surroundings, and the complexity of such systems. In middle school, students should be guided from specific examples of the interdependency of organisms to a more systematic view of the interactions that take place among organisms and their surroundings. Students growing understanding of systems in general will reinforce the concept of ecosystems. Stability and change in ecosystems can be considered in terms of variables such as population size, number and kinds of species, productivity, and the effect of human intervention.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- organisms both cooperate and compete in ecosystems. Balanced patterns of cooperation and competition may generate ecosystems that are relatively stable for hundreds or thousands of years.
- the matter in an ecosystem is constantly transferred between and among organisms and the physical environment. While the form and location is continuously changing, the total amount of matter in the system remains constant.
- it is important to consider what population will benefit and what population (not necessarily the same one) will bear the cost when deciding among alternative courses of action.
- sometimes decisions have unintended consequences no matter how thoughtfully they were made, and may actually create new problems and needs.

Grade 8 Skills and Concepts

Students will

- predict the effects of change on one or more components within an ecosystem by analyzing a variety of data
- analyze ecosystems to identify patterns of cooperation that enhance stability
- model the flow of energy and transfer of matter within ecosystems, communities and niches
- evaluate the risks and benefits of human actions affecting the environment and identify which populations will be harmed or helped. Use a variety of data/ sources to support or defend a position related to a proposed action, both orally and in writing. Analyze the validity of other arguments
- identify examples of human actions that have had unintended environmental consequences (e.g., DDT weakening egg shells, lead-based paint, asbestos insulation)

MIDDLE LEVEL SOCIAL STUDIES

Kentucky Core Academic Standards – Social Studies – Sixth Grade

Social studies at the middle level has a different level/grade context each year. For example, grade six includes world geography through an integrated social studies perspective. Grade seven focuses on an integrated study of world history from the earliest civilizations to 1500 A.D. Grade eight covers the history of the United States from the early inhabitants to Reconstruction. Regardless of the level/grade context, students incorporate each of the five areas of social studies in an integrated fashion to explore the content.

The primary purpose of social studies is to help students develop the ability to make informed decisions as citizens of a culturally diverse, democratic society in an interdependent world. The skills and concepts found throughout this document reflect this purpose by promoting the belief that students must develop more than an understanding of social studies content. They must also be able to apply the content perspectives of several academic fields of the social studies to personal and public experiences. By stressing the importance of both content knowledge and its application, the social studies curriculum in Kentucky provides a framework that prepares students to become productive citizens.

The social studies content standards at the middle level are directly aligned with Kentucky's **Academic Expectations**. Social Studies standards are organized around five "Big Ideas" that are important to the discipline of social studies. The five Big Ideas in social studies are: Government and Civics, Cultures and Societies, Economics, Geography and Historical Perspective. The Big Ideas, which are more thoroughly explained in the pages that follow, are conceptual organizers that are the same at each grade level. This consistency ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of social studies. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for social studies are fundamental to social studies literacy and build on prior learning.

The social studies program includes strong literacy connections, active hands-on work with concrete materials, and appropriate technologies. The social studies curriculum includes and depends on a number of different types of materials such as textbooks, non-fiction texts, biographies, autobiographies, journals, maps, newspapers, photographs and primary documents. Higher order thinking skills, such as compare, explain, analyze, predict, construct and interpret, are all heavily dependent on a variety of literacy skills and processes. For example, in social studies students must be able to understand specialized vocabulary, identify and comprehend key pieces of information within texts, determine what is fact and what is opinion, relate information across texts, connect new information to prior knowledge and synthesize the information to make meaning.

Big Idea: Government and Civics

The study of government and civics equips students to understand the nature of government and the unique characteristics of American representative democracy, including its fundamental principles, structure, and the role of citizens. Understanding the historical development of structures of power, authority, and governance and their evolving functions in contemporary U.S. society and other parts of the world is essential for developing civic competence. An understanding of civic ideals and practices of citizenship is critical to full participation in society and is a central purpose of the social studies.

Academic Expectations

2.14 Students understand the democratic principles of justice, equality, responsibility, and freedom and apply them to real-life situations.

2.15 Students can accurately describe various forms of government and analyze issues that relate to the rights and responsibilities of citizens in a democracy.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- the purposes and sources of power in present day governments vary, each reflecting and impacting the culture(s) of the people governed.
- individual rights of people vary under different forms of government.
- democratic governments of the present day function to protect the rights, liberty and property of their citizens while promoting the common good.
- the United States does not exist in isolation; its democratic form of government has played and continues to play a role in our interconnected society.

Grade 6 Skills and Concepts

Students will

- demonstrate an understanding (e.g., speak, draw, write, projects, present) of the nature of government:
  - describe different forms of government in the present day
  - compare purposes and sources of power in the most common forms of government (e.g., monarchy, democracy, republic, dictatorship) in the present day
  - explain how democratic governments of the present day function to preserve and protect the rights (e.g., voting), liberty, and property of their citizens by making, enacting and enforcing appropriate rules and laws
  - analyze information found in current events/news (e.g., TV, radio, Internet, articles) about different present day governments and how they may reflect/impact culture
- describe/give examples of similarities and differences between rights and responsibilities of individuals living in countries with different forms of government
- analyze information from a variety of print and non-print sources (e.g., books, documents, articles, observations, interviews) to investigate, explain and answer questions about different forms of government in the present day

Big Idea: Cultures and Societies

Culture is the way of life shared by a group of people, including their ideas and traditions. Cultures reflect the values and beliefs of groups in different ways (e.g., art, music, literature, religion); however, there are universals (e.g., food, clothing, shelter, communication) connecting all cultures. Culture influences viewpoints, rules and institutions in a global society. Students should understand that people form cultural groups throughout the United States and the World, and that issues and challenges unite and divide them.

Academic Expectations

2.16 Students observe, analyze, and interpret human behaviors, social groupings, and institutions to better understand people and the relationships among individuals and among groups.

2.17 Students interact effectively and work cooperatively with the many diverse ethnic and cultural groups of our nation and world.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- culture is a system of beliefs, knowledge, institutions, customs/traditions, languages and skills shared by a group of people. Through a society's culture, individuals learn the relationships, structures, patterns and processes to be members of the society.
- cultures develop social institutions (e.g., government, economy, education, religion, family) to structure society, influence behavior and respond to human needs.
- interactions among individuals and groups assume various forms (e.g., compromise, cooperation, conflict, competition) and are influenced by culture.
- culture affects how people in a society behave in relation to groups and their environment.
- an appreciation of the diverse complexity of cultures is essential in our global society.

Grade 6 Skills and Concepts

Students will

- demonstrate an understanding (e.g., speak, draw, write, sing, create) of the complexity of culture by exploring cultural elements (e.g., beliefs, customs/traditions, languages, skills, literature, the arts) of diverse groups and explaining how culture serves to define present day groups and may result in unique perspectives
- investigate social institutions (e.g., family, religion, education, government, economy) in relation to how they respond to human needs, structure society and influence behavior in the present day
- explain how communications between groups can be influenced by cultural differences; explain how interactions (e.g., political, economic, religious, ethnic) can lead to conflict and competition among individuals and groups in the present day
- describe conflicts between individuals or groups and explain how compromise and cooperation are possible choices to resolve conflict among individuals and groups in the United States and across regions of the world in the present day
- compare examples of cultural elements (e.g., language, the arts, customs/traditions, beliefs, skills and literature) of diverse groups in the present day, including non-western cultures within the United States, in current events/news using information from a variety of print and non-print sources (e.g., media, literature, interviews, observations, documentaries, artifacts)

Big Idea: Economics

Economics includes the study of production, distribution and consumption of goods and services. Students need to understand how their economic decisions affect them, others, the nation and the world. The purpose of economic education is to enable individuals to function effectively both in their own personal lives and as citizens and participants in an increasingly connected world economy. Students need to understand the benefits and costs of economic interaction and interdependence among people, societies, and governments.

Academic Expectations

2.18 Students understand economic principles and are able to make economic decisions that have consequences in daily living.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- the basic economic problem confronting individuals, societies and governments across present day geographic regions is scarcity: as a result of scarcity, economic choices and decisions must be made.
- economic systems (e.g., traditional, command, market, mixed) and a variety of fundamental economic concepts (e.g., supply and demand, opportunity cost) affect individuals, societies and governments of the present day.
- individuals, businesses and governments must make economic decisions about the use of resources in the production, distribution and consumption of goods and services.
- markets are institutional arrangements that enable buyers and sellers to exchange goods and services.
- our global economy provides for a level of interdependence among individuals, regions and nations of the present day.

Grade 6 Skills and Concepts

Students will

- demonstrate an understanding of the nature of limited resources and scarcity, using a variety of print and non-print sources (e.g., news media, news magazines, textbook, Internet) to investigate present day economic problems within the U.S. and in world regions:
  - explain how scarcity requires individuals, groups and governments to make decisions about the use of productive resources (e.g., natural resources, human resources and capital goods)
  - compare economic systems (e.g., traditional, command, market, mixed)
  - explain how the prices of goods and services are determined by supply and demand in market economies
- demonstrate an understanding of markets by providing scenarios to illustrate how goods and services are exchanged; explain how money can be used to express the market value of goods and services; describe the relationship between money and ease of trading, borrowing, investing and saving; analyze the connections between economic conditions and current events of the present day
- investigate the production and distribution of goods and services in present day societies:
  - describe how competition among buyers and sellers impacts the price of goods and services
  - explain ways in which societies (within the U.S. and in world regions) address basic economic questions (e.g., how resources are used to produce goods and services, how regions increase productivity) about the production, distribution and consumption of goods and services
  - analyze examples that demonstrate interdependence of international economic activities

Big Idea: Geography

Geography includes the study of the five fundamental themes of location, place, regions, movement and human/environmental interaction. Students need geographic knowledge to analyze issues and problems to better understand how humans have interacted with their environment over time, how geography has impacted settlement and population, and how geographic factors influence climate, culture, the economy and world events. A geographic perspective also enables students to better understand the past and present and to prepare for the future.

Academic Expectations

2.19 Students recognize and understand the relationship between people and geography and apply their knowledge in real-life situations.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- the use of geographic tools (e.g., maps, globes, photographs, models, charts, graphs, databases, and satellite images) and mental maps helps interpret information, analyze patterns and spatial data, and solve geographic issues in the present day.
- patterns emerge as humans move, settle, and interact on Earth's surface and can be identified by examining the location of physical and human characteristics, how they are arranged, and why they are in particular locations. Economic, political, cultural and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.
- regions help us to see Earth as an integrated system of places and features organized by such principles as landform types, political units, economic patterns and cultural groups.
- people depend on, adapt to, or modify the environment to meet basic needs. Human actions modify the physical environment and in turn, the physical environment limits or promotes human activities in the present day.
- citizens in an interdependent global community change their environment through the use of land and other resources. Many of the important issues facing societies and nations involve the consequences of interactions between human and physical systems.

Big Idea: Geography – Continued

Grade 6 Skills and Concepts
Students will

- demonstrate an understanding of patterns on the Earth's surface, using a variety of geographic tools (e.g., maps, globes, charts, graphs, satellite images):
  - locate, in absolute and relative terms, landforms and bodies of water
  - locate and interpret patterns on Earth's surface (e.g., how different factors, such as rivers, mountains and plains affect where human activities are located)
- investigate regions of the Earth's surface using information from print and non-print sources (e.g., books, films, magazines, Internet, geographic tools):
  - explain relationships between and among physical characteristics (e.g., mountains, bodies of water, valleys) of present day regions and how they are made distinctive by human characteristics (e.g., dams, roads, urban centers); describe advantages and disadvantages for human activities (e.g., exploration, migration, trade, settlement) that resulted
  - describe patterns of human settlement in the present day; explain relationships between these patterns and human needs; analyze how factors (e.g., war, famine, disease, economic opportunity, technology) impact human migration today
  - evaluate how availability of technology, resources and knowledge causes places and regions in the present day to change
  - interpret current events in the world from a geographic perspective
- investigate interactions among human activities and the physical environment in the present day:
  - explain how people modify the physical environment (e.g., dams, roads, bridges) to meet their needs in different regions
  - describe how the physical environment can promote or restrict human activities (e.g., exploration, migration, trade, settlement, development) in the present day
  - explain cause and effect relationships between the natural resources of a place or region and its political, social and economic development
  - describe how individual and group perspectives impact the use (e.g., urban development, recycling) of natural resources using current events

Big Idea: Historical Perspective

History is an account of events, people, ideas, and their interaction over time that can be interpreted through multiple perspectives. In order for students to understand the present and plan for the future, they must understand the past. Studying history engages students in the lives, aspirations, struggles, accomplishments and failures of real people. Students need to think in an historical context in order to understand significant ideas, beliefs, themes, patterns and events, and how individuals and societies have changed over time in Kentucky, the United States and the World.

Academic Expectations

2.20 Students understand, analyze, and interpret historical events, conditions, trends, and issues to develop historical perspective.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- interactions among countries and people are complex because of cultural, political, economic, geographic and historical differences.
- people and groups react and adapt to change over time in a variety of ways based on their needs, goals and experiences.

Grade 6 Skills and Concepts

Students will

- demonstrate an understanding of the interpretative nature of history using a variety of tools and resources (e.g., primary and secondary sources, Internet, timelines, maps):
  - investigate and chronologically describe (e.g., using timelines, charts, fictional and report writing, role playing) major events in present day regions of the world and draw inferences about their importance
  - examine potential causes of recent historical events and show connections among causes and effects; use cause-effect relationships to identify patterns of historical change influenced by government, culture, economics and/or geography
  - analyze historical events, conditions and perspectives of different individuals and groups (e.g., by gender, race, region, ethnic group, age, economic status, religion, political group) in present day regions of the world
- analyze major historical events and people in present day regions of the world using information from print and non-print sources (e.g., biographies, autobiographies, films, magazines, Internet)

Kentucky Core Academic Standards – Social Studies – Seventh Grade

Social studies at the middle level has a different level/grade context each year. For example, grade six includes world geography through an integrated social studies perspective. Grade seven focuses on an integrated study of world history from the earliest civilizations to 1500 A.D. Grade eight covers the history of the United States from the early inhabitants to Reconstruction. Regardless of the level/grade context, students incorporate each of the five areas of social studies in an integrated fashion to explore the content.

The primary purpose of social studies is to help students develop the ability to make informed decisions as citizens of a culturally diverse, democratic society in an interdependent world. The skills and concepts found throughout this document reflect this purpose by promoting the belief that students must develop more than an understanding of social studies content. They must also be able to apply the content perspectives of several academic fields of the social studies to personal and public experiences. By stressing the importance of both content knowledge and its application, the social studies curriculum in Kentucky provides a framework that prepares students to become productive citizens.

The social studies content standards at the middle level are directly aligned with Kentucky's **Academic Expectations**. Social Studies standards are organized around five "Big Ideas" that are important to the discipline of social studies. The five Big Ideas in social studies are: Government and Civics, Cultures and Societies, Economics, Geography and Historical Perspective. The Big Ideas, which are more thoroughly explained in the pages that follow, are conceptual organizers that are the same at each grade level. This consistency ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of social studies. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for social studies are fundamental to social studies literacy and build on prior learning.

The social studies program includes strong literacy connections, active hands-on work with concrete materials, and appropriate technologies. The social studies curriculum includes and depends on a number of different types of materials such as textbooks, non-fiction texts, biographies, autobiographies, journals, maps, newspapers, photographs and primary documents. Higher order thinking skills, such as compare, explain, analyze, predict, construct and interpret, are all heavily dependent on a variety of literacy skills and processes. For example, in social studies students must be able to understand specialized vocabulary, identify and comprehend key pieces of information within texts, determine what is fact and what is opinion, relate information across texts, connect new information to prior knowledge and synthesize the information to make meaning.

Big Idea: Government and Civics

The study of government and civics equips students to understand the nature of government and the unique characteristics of American representative democracy, including its fundamental principles, structure, and the role of citizens. Understanding the historical development of structures of power, authority, and governance and their evolving functions in contemporary U.S. society and other parts of the world is essential for developing civic competence. An understanding of civic ideals and practices of citizenship is critical to full participation in society and is a central purpose of the social studies.

Academic Expectations

2.14 Students understand the democratic principles of justice, equality, responsibility, and freedom and apply them to real-life situations.

2.15 Students can accurately describe various forms of government and analyze issues that relate to the rights and responsibilities of citizens in a democracy.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- forms of government in world civilizations prior to 1500 A.D. had similarities and differences in their purposes and sources of power.
- the key ideals (e.g., citizenship, justice, equality, and rule of law) of a democratic form of government were practiced in some world civilizations prior to 1500 A.D.
- individual rights in world civilizations prior to 1500 A.D. varied under different forms of government.

Grade 7 Skills and Concepts

Students will

- demonstrate an understanding (e.g., speak, draw, write, projects, present) of the nature of government:
  - explain the role of government (e.g., establishing order, providing security, achieving common goals) in world civilizations prior to 1500 A.D. and make connections to how government influences culture, society and the economy
  - compare different forms of government, and the purposes and sources of power in the most common forms of government (e.g., monarchy, democracy, republic, dictatorship) in world civilizations prior to 1500 A.D.
  - analyze how some world civilizations prior to 1500 A.D. (e.g. Greece, Rome) demonstrated the use of democratic principles (e.g., justice, equality, responsibility, freedom)
- compare rights and responsibilities of individuals in world civilizations prior to 1500 A.D. to the rights and responsibilities of U.S. citizens today
- analyze information from a variety of print and non-print sources (e.g., books, documents, articles, observations, interviews, Internet sources) to research, explain and answer questions about governments and people of world civilizations prior to 1500 A.D.

Big Idea: Cultures and Societies

Culture is the way of life shared by a group of people, including their ideas and traditions. Cultures reflect the values and beliefs of groups in different ways (e.g., art, music, literature, religion); however, there are universals (e.g., food, clothing, shelter, communication) connecting all cultures. Culture influences viewpoints, rules and institutions in a global society. Students should understand that people form cultural groups throughout the United States and the World, and that issues and challenges unite and divide them.

Academic Expectations

2.16 Students observe, analyze, and interpret human behaviors, social groupings, and institutions to better understand people and the relationships among individuals and among groups.

2.17 Students interact effectively and work cooperatively with the many ethnic and cultural groups of our nation and world.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- culture is a system of beliefs, knowledge, institutions, customs/traditions, languages and skills shared by a group of people. Through a society's culture, individuals learn the relationships, structures, patterns and processes to be members of the society.
- cultures develop social institutions (e.g., government, economy, education, religion, family) to structure society, influence behavior and respond to human needs.
- interactions among individuals and groups assume various forms (e.g., compromise, cooperation, conflict, competition) and are influenced by culture.
- culture affects how people in a society behave in relation to groups and their environment.

Grade 7 Skills and Concepts

Students will

- demonstrate an understanding (e.g., speak, draw, write, sing, create) of the complexity of culture by exploring cultural elements (e.g., beliefs, customs/traditions, languages, skills, literature, the arts) of diverse groups and explaining how culture served to define groups in world civilizations prior to 1500 A.D. and resulted in unique perspectives
- investigate social institutions (e.g., family, religion, education, government, economy) in relation to how they responded to human needs, structured society and influenced behavior in world civilizations prior to 1500 A.D.
- explain how communications between groups can be influenced by cultural differences; explain how interactions lead to conflict and competition (e.g., political, economic, religious, ethnic) among individuals and groups in world civilizations prior to 1500 A.D.
- describe conflicts between individuals or groups and explain how compromise and cooperation were possible choices to resolve conflict among individuals and groups in world civilizations prior to 1500 A.D.
- compare examples of cultural elements (e.g., beliefs, customs/traditions, language, skills, the arts, literature) using information from a variety of print and non-print sources (e.g., media, literature, interviews, observations, documentaries, artifacts) to analyze how cultures in world civilizations prior to 1500 A.D. have influenced cultures of today

Big Idea: Economics

Economics includes the study of production, distribution and consumption of goods and services. Students need to understand how their economic decisions affect them, others, the nation and the world. The purpose of economic education is to enable individuals to function effectively both in their own personal lives and as citizens and participants in an increasingly connected world economy. Students need to understand the benefits and costs of economic interaction and interdependence among people, societies, and governments.

Academic Expectations

2.18 Students understand economic principles and are able to make economic decisions that have consequences in daily living.

Grade 7 Enduring Knowledge – Understandings

Students understand that

- the basic economic problem confronting individuals, societies and governments in world civilizations prior to 1500 A.D. was scarcity: as a result of scarcity, economic choices and decisions had to be made.
- the study of economics includes a variety of fundamental economic concepts (e.g., supply and demand, opportunity cost) that apply to individuals, societies and governments in world civilizations prior to 1500 A.D.
- individuals, groups and governments in world civilizations prior to 1500 A.D. made economic decisions about the use of resources in the production, distribution and consumption of goods and services.

Grade 7 Skills and Concepts

Students will

- demonstrate an understanding of the nature of limited resources and scarcity, using information from a variety of print and non-print sources (e.g., textbook, Internet, resource materials) to investigate world civilizations prior to 1500 A.D.:
  - explain how scarcity requires individuals, groups and governments to make decisions about use of productive resources (e.g., natural resources, human resources and capital goods)
  - compare economic systems and explain the concept of supply and demand in world civilizations prior to 1500 A.D.
  - describe how goods and services were exchanged in world civilizations prior to 1500 A.D.
- investigate the production and distribution of goods and services in world civilizations prior to 1500 A.D. explaining ways in which societies addressed basic economic questions (e.g., how resources were used to produce goods and services; how new knowledge, technology/tools, and specialization increased productivity) about the production, distribution and consumption of goods and services

Big Idea: Geography

Geography includes the study of the five fundamental themes of location, place, regions, movement and human/environmental interaction. Students need geographic knowledge to analyze issues and problems to better understand how humans have interacted with their environment over time, how geography has impacted settlement and population, and how geographic factors influence climate, culture, the economy and world events. A geographic perspective also enables students to better understand the past and present and to prepare for the future.

Academic Expectations

2.19 Students recognize and understand the relationship between people and geography and apply their knowledge in real-life situations.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- the use of geographic tools (e.g., maps, globes, photographs, models, charts, graphs) and mental maps helps interpret information, analyze patterns and spatial data, and better understand geographic issues in world civilizations prior to 1500 A.D.
- patterns emerge as humans move, settle, and interact on Earth's surface, and can be identified by examining the location of physical and human characteristics, how they are arranged, and why they are in particular locations. Economic, political, cultural and social processes interacted to shape patterns of human populations, interdependence, cooperation and conflict in world civilizations prior to 1500 A.D.
- regions help us to see Earth as an integrated system of places and features organized by such principles as landform types, political units, economic patterns and cultural groups.
- people depended on, adapted to, or modified the environment to meet basic needs. Human actions modified the physical environment and in turn, the physical environment limited or promoted human activities in world civilizations prior to 1500 A.D.

Big Idea: Geography – Continued

Grade 7 Skills and Concepts
Students will

- demonstrate an understanding of patterns on the Earth's surface, using a variety of geographic tools (e.g., maps, globes, charts, graphs):
  - locate, in absolute or relative terms, landforms and bodies of water
  - locate and interpret patterns on Earth's surface, explaining how different factors (e.g., rivers, mountains, seacoasts, deserts) impacted where human activities were located in world civilizations prior to 1500 A.D.
- investigate regions of the Earth's surface in world civilizations prior to 1500 A.D. using information from print and non-print sources (e.g., books, films, magazines, Internet, geographic tools):
  - explain relationships between and among physical characteristics of regions during the time of world civilizations prior to 1500 A.D., and explain how regions were made distinctive (e.g., dams, irrigation, roads) by human characteristics; describe advantages and disadvantages for human activities (e.g., exploration, migration, trade, settlement) that resulted
  - describe patterns of human settlement in world civilizations prior to 1500 A.D.; explain relationships between these patterns and human needs; analyze how factors (e.g., war, famine, disease, economic opportunity and technology) impacted human migration
  - evaluate how availability of technology, resources and knowledge caused places and regions to evolve and change
  - analyze current events to compare geographic perspectives of today with those of world civilizations prior to 1500 A.D.
- investigate interactions among human activities and the physical environment:
  - explain how people of world civilizations prior to 1500 A.D. used technology (e.g., dams, roads, bridges) to modify the physical environment to meet their needs
  - describe how the physical environment promoted or restricted human activities (e.g., exploration, migration, trade, settlement, development) of world civilizations prior to 1500 A.D.
  - analyze cause and effect relationships between the natural resources of world civilizations prior to 1500 A.D. and their political, social and economic development

Big Idea: Historical Perspective

History is an account of events, people, ideas and their interaction over time that can be interpreted through multiple perspectives. In order for students to understand the present and plan for the future, they must understand the past. Studying history engages students in the lives, aspirations, struggles, accomplishments and failures of real people. Students need to think in an historical context in order to understand significant ideas, beliefs, themes, patterns and events, and how individuals and societies have changed over time in Kentucky, the United States and the World.

Academic Expectations

2.20 Students understand, analyze, and interpret historical events, conditions, trends, and issues to develop historical perspective.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- history is an account of human activities that is interpretive in nature, and a variety of tools (e.g., primary and secondary sources, timelines, Internet, maps) are needed to analyze historical events in world civilizations prior to 1500 A.D.
- world civilizations prior to 1500 A.D. can be examined in order to develop chronological understanding, recognize cause-effect relationships, and interpret historical events.
- geography and natural resources had a significant impact on world historical perspectives and events prior to 1500 A.D.
- advances in science and technology had a significant impact on historical events in world civilizations prior to 1500 A.D.
- each era (e.g., Beginnings to Human Society, Early Civilizations, Classical Civilizations, Major Civilizations, States and Empires, Medieval Europe and the Rise of Western Civilizations, and Exploration as it relates to world civilizations prior to 1500 A.D.) in the history of world civilizations had social, political, economic and/or cultural characteristics.

Big Idea: Historical Perspective – Continued

Grade 7 Skills and Concepts
Students will

- demonstrate an understanding of the interpretative nature of history using a variety of tools and resources (e.g., primary and secondary sources, Internet, timelines, maps):
  - investigate and chronologically describe (e.g., using timelines, charts, fictional and report writing, role playing) significant events in world civilizations prior to 1500 A.D. and draw inferences about their importance
  - examine multiple cause and effect relationships that have shaped history throughout world civilizations prior to 1500 A.D.
  - analyze historical events, conditions and perspectives of different individuals and groups (e.g., by gender, race, region, ethnic group, age, economic status, religion, political group) in world civilizations prior to 1500 A.D.
- investigate, using primary and secondary sources (e.g., biographies, films, magazines, Internet resources, textbooks, artifacts), to answer questions about, locate examples of, or interpret factual and fictional accounts of major historical events and people:
  - explain how early hunters and gatherers (Paleolithic and Neolithic) developed new technologies
  - describe the contributions made by world civilizations prior to 1500 A.D. (e.g., Egypt, Mesopotamia, the Indus River Valley, the Middle East, India, China) to society and analyze the impact these contributions made to future generations
  - examine the rise of classical civilizations and empires (e.g., Greece and Rome) and analyze their lasting impacts on the world in the areas of government, philosophy, architecture, art, drama and literature
  - describe the rise of western civilizations (e.g., Mayan, Incan, Aztec) and non-western civilizations (e.g., Egyptian, Chinese, Indian, Persian) and analyze ways in which these cultures influenced government, philosophy, art, drama and literature in the present day
  - explain how the movement of goods affected settlement patterns in and relations between early civilizations, empires, nations and states (e.g., Asia, Africa, and the Americas)
  - examine developments during the Middle Ages (e.g., feudalism, nation states, monarchies, religious institutions, limited government, trade) and describe resulting influences on modern societies
  - describe how the Age of Exploration (world civilizations prior to 1500 A.D.) caused diverse cultures to interact in various forms (e.g., compromise, cooperation, conflict, competition); explain how governments expanded their territories and developed new technologies

Kentucky Core Academic Standards – Social Studies – Eighth Grade

Social studies at the middle level has a different level/grade context each year. For example, grade six includes world geography through an integrated social studies perspective. Grade seven focuses on an integrated study of world history from the earliest civilizations to 1500 A.D. Grade eight covers the history of the United States from the early inhabitants to Reconstruction. Regardless of the level/grade context, students incorporate each of the five areas of social studies in an integrated fashion to explore the content.

The primary purpose of social studies is to help students develop the ability to make informed decisions as citizens of a culturally diverse, democratic society in an interdependent world. The skills and concepts found throughout this document reflect this purpose by promoting the belief that students must develop more than an understanding of social studies content. They must also be able to apply the content perspectives of several academic fields of the social studies to personal and public experiences. By stressing the importance of both content knowledge and its application, the social studies curriculum in Kentucky provides a framework that prepares students to become productive citizens.

The social studies content standards at the middle level are directly aligned with Kentucky's **Academic Expectations**. Social Studies standards are organized around five "Big Ideas" that are important to the discipline of social studies. The five Big Ideas in social studies are: Government and Civics, Cultures and Societies, Economics, Geography and Historical Perspective. The Big Ideas, which are more thoroughly explained in the pages that follow, are conceptual organizers that are the same at each grade level. This consistency ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of social studies. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for social studies are fundamental to social studies literacy and build on prior learning.

The social studies program includes strong literacy connections, active hands-on work with concrete materials, and appropriate technologies. The social studies curriculum includes and depends on a number of different types of materials such as textbooks, non-fiction texts, biographies, autobiographies, journals, maps, newspapers, photographs and primary documents. Higher order thinking skills, such as compare, explain, analyze, predict, construct and interpret, are all heavily dependent on a variety of literacy skills and processes. For example, in social studies students must be able to understand specialized vocabulary, identify and comprehend key pieces of information within texts, determine what is fact and what is opinion, relate information across texts, connect new information to prior knowledge and synthesize the information to make meaning.

Big Idea: Government and Civics

The study of government and civics equips students to understand the nature of government and the unique characteristics of American representative democracy, including its fundamental principles, structure, and the role of citizens. Understanding the historical development of structures of power, authority, and governance and their evolving functions in contemporary U.S. society and other parts of the world is essential for developing civic competence. An understanding of civic ideals and practices of citizenship is critical to full participation in society and is a central purpose of the social studies.

Academic Expectations

2.14 Students understand the democratic principles of justice, equality, responsibility, and freedom and apply them to real-life situations.

2.15 Students can accurately describe various forms of government and analyze issues that relate to the rights and responsibilities of citizens in a democracy.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- the American political system developed from a colonial base of representative democracy by the actions of people who envisioned an independent country and new purposes for the government.
- the United States government was formed to establish order, provide security and accomplish common goals.
- the fundamental values and principles (e.g., liberty, justice, individual human dignity, the rule of law) of American representative democracy as expressed in historical documents (e.g., the Declaration of Independence, the Constitution of the United States) are enduring and remain significant today.
- the Constitution of the United States establishes a government of limited powers that are shared among different levels and branches. The Constitution is a document that can be changed from time to time through both formal and informal processes (e.g., amendments, court cases, executive actions) to meet the needs of its citizens.
- as members of a democratic society, all citizens of the United States have certain rights and responsibilities, including civic participation.

Big Idea: Government and Civics – Continued

Grade 8 Skills and Concepts
Students will

- demonstrate an understanding (e.g., illustrate, write, model, projects, present) of the nature of government:
  - explain the role of government (e.g., establishing order, providing security, achieving common goals) in the United States prior to Reconstruction and make connections to how government influences culture, society and the economy
  - describe how democratic governments in the United States prior to Reconstruction functioned to preserve and protect the rights (e.g., voting), liberty and property of their citizens by making, enacting and enforcing rules and laws (e.g., constitutions, laws, statutes)
  - compare purposes and sources of power in the most common forms of government (e.g., monarchy, democracy, republic)
- investigate the Constitution of the United States:
  - examine ways the Constitution is a document that can be changed from time to time through both formal and informal processes (e.g., amendments, court cases, executive actions) to meet the needs of its citizens
  - explain the political process established by the U.S. Constitution and ways the Constitution separates power among the legislative, executive and judicial branches to prevent the concentration of political power and to establish a system of checks and balances
  - analyze why the powers of the state and federal governments are sometimes shared and sometimes separated (federalism)
- make inferences about and among significant historical events and historical documents (e.g., the Declaration of Independence, the Constitution of the United States) to illustrate connections to democratic principles and guaranteed rights for all citizens
- explain pros and cons of how citizen responsibilities (e.g., participate in community activities, vote in elections) and duties (e.g., obey the law, pay taxes, serve on a jury, register for the military) impact the U.S. government's ability to function as a democracy
- analyze information from a variety of print and non-print sources (e.g., books, documents, articles, interviews, Internet) to research answers to questions and explore issues

Big Idea: Cultures and Societies

Culture is the way of life shared by a group of people, including their ideas and traditions. Cultures reflect the values and beliefs of groups in different ways (e.g., art, music, literature, religion); however, there are universals (e.g., food, clothing, shelter, communication) connecting all cultures. Culture influences viewpoints, rules and institutions in a global society. Students should understand that people form cultural groups throughout the United States and the World, and that issues and challenges unite and divide them.

Academic Expectations

2.16 Students observe, analyze, and interpret human behaviors, social groupings, and institutions to better understand people and the relationships among individuals and among groups.

2.17 Students interact effectively and work cooperatively with the many diverse ethnic and cultural groups of our nation and world.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- culture is a system of beliefs, knowledge, institutions, customs/traditions, languages and skills shared by a group of people. Through a society's culture, individuals learn the relationships, structures, patterns and processes to be members of the society.
- cultures develop social institutions (e.g., government, economy, education, religion, family) to structure society, influence behavior, and respond to human needs.
- interactions among individuals and groups assume various forms (e.g., compromise, cooperation, conflict, competition) and are influenced by culture.
- multiple factors contributed to the cultural diversity of the United States prior to Reconstruction; an understanding and appreciation of the diverse complexity of cultures is essential in our society.

Grade 8 Skills and Concepts

Students will

- demonstrate an understanding (e.g., speak, draw, write, sing, create) of the nature of culture by exploring cultural elements (e.g., beliefs, customs/traditions, languages, skills, literature, the arts) of diverse groups in the United States prior to Reconstruction and explain how culture served to define specific groups and resulted in unique perspectives
- investigate social institutions (e.g., family, religion, education, government, economy) in relation to how they responded to human needs, structured society and influenced behavior in the United States prior to Reconstruction
- explain how communications between groups were influenced by cultural differences; explain how interactions influenced conflict and competition (e.g., political, economic, religious, ethnic) among individuals and groups in the United States prior to Reconstruction
- describe conflicts between individuals or groups and explain how compromise and cooperation were possible choices to resolve conflict among individuals and groups in the United States prior to Reconstruction
- compare examples of cultural elements of today to those in the United States prior to Reconstruction, using information from a variety of print and non-print sources (e.g., media, literature, interviews, observations, documentaries, artifacts)

Big Idea: Economics

Economics includes the study of production, distribution and consumption of goods and services. Students need to understand how their economic decisions affect them, others, the nation and the world. The purpose of economic education is to enable individuals to function effectively both in their own personal lives and as citizens and participants in an increasingly connected world economy. Students need to understand the benefits and costs of economic interaction and interdependence among people, societies, and governments.

Academic Expectations

2.18 Students understand economic principles and are able to make economic decisions that have consequences in daily living.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- the basic economic problem confronting individuals, societies and government in the development of the United States prior to Reconstruction was scarcity; as a result of scarcity, economic choices and decisions were made.
- the development of the American economic system, institutions and markets prior to Reconstruction helped individuals, groups and governments achieve their goals and impacted life in the United States.
- the United States government and its policies played a major role in determining how the U.S. economy functioned prior to Reconstruction.
- individuals, businesses and the government of the U.S. prior to Reconstruction made economic decisions about the use of resources in the production, distribution and consumption of goods and services.

Grade 8 Skills and Concepts

Students will

- demonstrate an understanding of the nature of limited resources and scarcity in the United States prior to Reconstruction, using information from a variety of print and non-print sources (e.g., news media, news magazines, textbook, Internet):
  - explain how scarcity required individuals, groups and governments to make decisions about use of productive resources (e.g., natural resources, human resources and capital goods)
  - describe how goods and services were exchanged and how supply and demand and competition determined prices
  - analyze cause-effect relationships among financial decisions by individuals and groups and historical events
- investigate the production and distribution of goods and services in the United States prior to Reconstruction:
  - examine ways in which basic economic questions about the production, distribution and consumption of goods and services were addressed
  - explain how resources were used to produce goods and services and how profit motivated individuals and groups to take risks in producing goods and services
  - analyze how new knowledge, technology/tools and specialization influenced productivity of goods and services
- analyze interdependence of economic activities among individuals and groups in the United States prior to Reconstruction

Big Idea: Geography

Geography includes the study of the five fundamental themes of location, place, regions, movement and human/environmental interaction. Students need geographic knowledge to analyze issues and problems to better understand how humans have interacted with their environment over time, how geography has impacted settlement and population, and how geographic factors influence climate, culture, the economy and world events. A geographic perspective also enables students to better understand the past and present and to prepare for the future.

Academic Expectations

2.19 Students recognize and understand the relationship between people and geography and apply their knowledge in real-life situations.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- use of geographic tools (e.g., maps, globes, photographs, models, charts, graphs, databases) and mental maps helps to interpret information, analyze patterns and spatial data, and understand geographic issues encountered in the United States prior to Reconstruction.
- patterns emerge as humans move, settle, and interact on Earth's surface and can be identified by examining the location of physical and human characteristics, how they are arranged, and why they are in particular locations. Economic, political, cultural and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict in the United States prior to Reconstruction.
- regions help us to see Earth as an integrated system of places and features organized by such principles as landform types, political units, economic patterns and cultural groups.
- people depended on, adapted to, or modified the environment to meet basic needs. Human actions modified the physical environment and in turn, the physical environment limited or promoted human activities in the United States prior to Reconstruction.

Big Idea: Geography – Continued

Grade 8 Skills and Concepts
Students will

- demonstrate an understanding of patterns on Earth's surface using a variety of geographic tools (e.g., maps, globes, charts, graphs, photographs, models):
  - locate, in absolute or relative terms, landforms and bodies of water
  - locate, interpret patterns on Earth's surface, and explain how different physical factors (e.g., rivers, mountains, seacoasts) impacted where human activities were located in the United States prior to Reconstruction
- investigate regions of the Earth's surface in the United States prior to Reconstruction using information from print and non-print sources (e.g., books, films, magazines, Internet, geographic tools):
  - explain relationships between and among physical characteristics of regions and how they were made distinctive by human characteristics (e.g., dams, roads, urban centers); describe
  - advantages and disadvantages for human activities (e.g., exploration, migration, trade, settlement) that resulted
  - describe patterns of human settlement; explain relationships between these patterns and human needs; analyze how factors (e.g., war, famine, disease, economic opportunity, and technology) affected human migration
  - evaluate how availability of technology, resources and knowledge caused places and regions to evolve and change
  - analyze current events to compare geographic perspectives of today with those prior to Reconstruction
- investigate interactions among human activities and the physical environment in the United States prior to Reconstruction:
  - explain how people used technology to modify the physical environment to meet their needs
  - describe how the physical environment and different viewpoints promoted or restricted human activities (e.g., exploration, migration, trade, settlement, development) and land use
  - analyze cause-effect relationships between and among natural resources and political, social and economic development

Big Idea: Historical Perspective

History is an account of events, people, ideas, and their interaction over time that can be interpreted through multiple perspectives. In order for students to understand the present and plan for the future, they must understand the past. Studying history engages students in the lives, aspirations, struggles, accomplishments and failures of real people. Students need to think in an historical context in order to understand significant ideas, beliefs, themes, patterns and events, and how individuals and societies have changed over time in Kentucky, the United States and the World.

Academic Expectations

2.20 Students understand, analyze, and interpret historical events, conditions, trends, and issues to develop historical perspective.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- history is an account of human activities that is interpretive in nature, and a variety of tools (e.g., primary and secondary sources, data, artifacts) are needed to analyze and understand historical events.
- U.S. History can be analyzed by examining significant eras (Exploration as it relates to the settlement of America, The Great Convergence, Colonization and Settlement, Revolution and the New Nation, Expansion and Reform, Civil War) to develop chronological understanding and recognize cause-and-effect relationships and multiple causation.
- U.S. History (prior to Reconstruction) has been impacted by significant individuals and groups.
- geography, culture and economics have a significant impact on historical perspectives and events.
- advances in science and technology have a significant impact on historical events.

Big Idea: Historical Perspective – Continued

Grade 8 Skills and Concepts

Students will

- demonstrate an understanding of the interpretative nature of history using a variety of tools and resources (e.g., primary and secondary sources, Internet, timelines, maps):
  - investigate, describe and analyze significant historical events and conditions in the U.S prior to Reconstruction, drawing inferences about perspectives of different individuals and groups (e.g., gender, race, region, ethnic group, age, economic status, religion, political group)
  - examine multiple cause-effect relationships that have shaped history (e.g., showing how a series of events are connected)
- investigate, using primary and secondary sources (e.g., biographies, films, magazines, Internet resources, textbooks, artifacts) to answer questions about, locate examples of, or interpret factual and fictional accounts of major historical events and people:
  - analyze how exploration and the settlement of America caused diverse cultures to interact in various forms (e.g., compromise, cooperation, conflict, competition); explain how governments expanded their territories and the impact this had on the United States prior to Reconstruction
  - describe events and conditions that led to the "Great Convergence" of European, African and Native American people beginning in the late 15th century; analyze how America's diverse society developed as a result of these events
  - explain how the ideals of equality and personal liberty (e.g., rise of individual rights, economic freedom, religious diversity) that developed during the colonial period were motivations for the American Revolution and proved instrumental in forging a new nation
  - describe how the growth of democracy and geographic expansion occurred and were significant to the development of the United States prior to Reconstruction
  - compare the political, social, economic and cultural differences (e.g., slavery, tariffs, industrialism vs. agrarianism, federal vs. states' rights) between and among regions of the U.S. and explain how these differences contributed to the American Civil War
  - evaluate how advances in science and technology contributed to the changing American society in the United States prior to Reconstruction

MIDDLE LEVEL TECHNOLOGY

Kentucky Core Academic Standards – Technology – Middle School

Technology use in the 21st century has become a vital component of all aspects of life. For students in Kentucky to be contributing citizens, they must receive an education that incorporates technology literacy at all levels. Technology literacy is the ability of students to responsibly use appropriate technology to communicate, solve problems, and access, manage, integrate, evaluate, and create information to improve learning in all subject areas and to acquire lifelong knowledge and skills in the 21st century. The Technology Kentucky Core Academic Standards provides a framework for integrating technology into all content areas. It reflects the basic skills required for each student to be competitive in the global economy.

For students to gain the technology competencies, it is essential that they have access to technology during the school day in all grade levels. Instruction should provide opportunities for students to gain and demonstrate technology skills that build primary through grade 12.

The technology content standards should be integrated into each curricular discipline. The purpose of integrating technology is to help students make useful connections between what they learn in each content area and the real world. Technology knowledge, concepts and skills should be interwoven into lessons or units and taught in partnership with other content areas. Technology lends itself to curriculum integration and team teaching. Technology can enhance learning for all students, and for some it is essential for access to learning.

The technology content standards are organized by grade spans: primary, intermediate, middle, and high. The technology Kentucky Core Academic Standards at the middle level builds upon primary and intermediate experiences and includes students demonstrating competencies in technology literacy. Students use word processing, database, spreadsheet, browser, presentation and other tools. Students know the purpose and function of technology to enable them to select the appropriate tools to create original innovative work. By the end of middle school, students apply and demonstrate technology competencies across all curriculum areas. This experience will prepare them in meeting the minimum technology requirements needed for high school graduation.

The technology content standards at the middle grade span are directly aligned with Kentucky's **Academic Expectations**. Technology standards are organized around three Big Ideas that are important to the discipline of technology. The three Big Ideas in technology are: **1) Information, Communication and Productivity; 2) Safety and Ethical/Social Issues;** and **3) Research, Inquiry/Problem-Solving and Innovation**. The Big Ideas are conceptual organizers for technology. Each grade level span ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of *Enduring Knowledge/Understandings* that represent overarching generalizations linked to the Big Ideas of Technology. The understandings represent the desired results--what learning will focus upon and what knowledge students will be able to explain or apply. *Understandings* can be used to frame development of units of study and lesson plans.

Skills and Concepts describe ways that students demonstrate their learning and are specific to each grade level span. The skills and concepts for technology are fundamental to technology literacy, safe use and inquiry. The skills and concepts build on prior learning.

Big Idea: Information, Communication and Productivity

Students demonstrate a sound understanding of the nature and operations of technology systems. Students use technology to learn, to communicate, increase productivity and become competent users of technology. Students manage and create effective oral, written and multimedia communication in a variety of forms and contexts.

Academic Expectations

1.11 Students write using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.16 Students use computers and other kinds of technology to collect, organize, and communicate information and ideas.
3.3 Students demonstrate the ability to be adaptable and flexible through appropriate tasks or projects.
6.1 Students connect knowledge and experiences from different subject areas.
6.3 Students expand their understanding of existing knowledge by making connections with new knowledge, skills, and experiences.

Middle Enduring Knowledge – Understandings

Students will understand that

- appropriate terminology, proper keyboarding, computer operations and applications assist to gain confidence in the use of technology.
- technology (e.g. keyboarding, word processing, spreadsheets, databases, hardware, scanners, digital and video cameras) is used effectively and efficiently to accomplish a task.
- technology is used to communicate in a variety of ways.
- productivity tools are used effectively and efficiently to accomplish a task.

Middle Skills and Concepts – Information

Students will

- use a variety of technology (e.g., probeware, handhelds, digital and video cameras, scanners) to collect, analyze and present in all content areas
- recognize, discuss and use terms/concepts related to the protection of computers, networks and information (e.g., virus protection, network security, passwords, firewalls, privacy laws)
- use proper keyboarding techniques, optimal posture and correct hand placement (e.g., continue appropriate finger reaches and building speed)

Middle Skills and Concepts – Communication

Students will

- use technology to communicate in a variety of modes (e.g., audio, speech to text, print, media)
- select and use appropriate technology to collect, analyze and share information
- use online collaboration and interactive projects (e.g., email, videoconferencing) to communicate with others (e.g., experts, mentors)
- use a variety of electronic formats (e.g., web publishing, oral presentations, journals and multimedia presentations) to summarize and communicate results

Middle Skills and Concepts – Productivity

Students will

- use productivity tools to complete content assignments and projects
- construct and publish information in printed and digital formats (e.g., printed reports, resumes, brochures, charts, multimedia presentations, videos and websites) for authentic audiences
- use technology to develop innovative and creative products

Big Idea: Safety and Ethical/Social Issues

Students understand safety and ethical/social issues related to technology. Students practice and engage in safe, responsible and ethical use of technology. Students develop positive attitudes toward technology use that supports lifelong learning, collaboration, personal pursuits and productivity.

Academic Expectations

2.17 Students interact effectively and work cooperatively with the many ethnic and cultural groups of our nation and world.
3.6 Students demonstrate the ability to make decisions based on ethical values.
4.3 Students individually demonstrate consistent, responsive and caring behavior.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
4.5 Students demonstrate an understanding of, appreciation for and sensitivity to a multi-cultural and world view.

Middle Enduring Knowledge – Understandings

Students will understand that

- collaborative and interactive projects use technology to enhance learning.
- acceptable technology etiquette is essential to respectful social interactions and good citizenship.
- ethical use of technology is necessary to ensure safety, privacy and legal issues.
- technology is used in occupations as a basic skill to be successful and productive in a global society.
- assistive technology supports learning to ensure equitable access to a productive life.

Middle Skills and Concepts – Safety

Students will

- explain the importance of safe Internet use (e.g., iSafe skills)
- apply safe behavior when using technology

Middle Skills and Concepts – Ethical Issues

Students will

- describe intellectual property issues related to technology
- practice responsible (e.g., virus protection, passwords) use of technology adhering to the Acceptable Use Policy (AUP) as well as other state and federal laws
- model ethical behavior relating to security, privacy, passwords and personal information and recognize possible consequences of misuse
- use legal and ethical practices when completing digital projects/school work and credit all participants for their contribution to the work
- investigate basic issues related to responsible use of technology and describe personal consequences of inappropriate use
- investigate software piracy, its impact on the technology industry and possible repercussions to individuals and/or the school district

Middle Skills and Concepts – Human Issues

Students will

- use appropriate behavior related to computers, networks, digital information (e.g., security, privacy, passwords, personal information)
- use proper social etiquette with any technology (e.g., email, blogs, IM, telephone, help desk) while collaborating with peers, experts and others
- use technology to engage in interactive projects in the classroom
- describe how societal expectations drive the acceptance and use of new products and systems
- investigate how the use of technology affects humans in various ways (e.g., safety, comfort, choices and attitudes)
- explore how technology is used in different occupations
- engage technology to support learning (e.g., online courses, online assessments)
- conclude that assistive technology supports learning to ensure equitable access to a productive life

Big Idea: Research, Inquiry/Problem-Solving and Innovation

Students understand the role of technology in research and experimentation. Students engage technology in developing solutions for solving problems in the real world. Students will use technology for original creation and innovation.

Academic Expectations

1.1 Students use reference tools such as dictionaries, almanacs, encyclopedias, and computer reference programs and research tools such as interviews and surveys to find the information they need to meet specific demands, explore interests, or solve specific problems.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating, and comparing to solve a variety of problems in real-life situations.

5.2 Students use creative thinking skills to develop or invent novel, constructive ideas or products.

5.4 Students use a decision-making process to make informed decisions among options.

5.5 Students use problem-solving processes to develop solutions to relatively complex problems.

6.1 Students connect knowledge and experiences from different subject areas.

Middle Enduring Knowledge – Understandings

Students will understand that

- technology supports creative thinking and implementation of new ideas to reach goals.
- technology supports critical thinking skills used in inquiry/problem solving to make informed decisions.
- technology assists in researching, analyzing and evaluating information obtained from a variety of sources to answer an essential question across all content areas.
- technology is used to analyze real world data through inquiry/problem solving in order to produce results.
- technology problem solving strategies is applied to innovative design for authentic, creative and real-world applications.

Big Idea: Research, Inquiry/Problem-Solving and Innovation – Continued

Middle Skills and Concepts - Research
Students will

- demonstrate an understanding of the strengths and limitations of the Internet
- apply a research process model (e.g., Big6, Research Cycle) to conduct online research
- locate and collect information from a variety of electronic resources (e.g. search engines, CD-ROM, online periodical databases, Virtual library/online catalogs, interactive video conferencing) and correctly cite sources
- evaluate the accuracy and appropriateness of electronic information
- organize information that is collected using a variety of tools (e.g., spreadsheet, database, saved files)
- communicate results of research and learning with others using the most appropriate tools (e.g., desktop-published or word-processed report, multimedia presentation)
- manipulate data using charting tools and graphic organizers (e.g., concept mapping, flow charting and outlining software) to connect ideas and organize information

Middle Skills and Concepts – Inquiry/Problem-solving
Students will

- use appropriate technology and strategies to solve content-specific problems in the real-world
- determine which technology is useful and select the appropriate tool(s) (e.g., calculators, data collection probes, videos, educational software) to inquire/problem- solve in self-directed and extended learning
- apply strategies for identifying and solving minor hardware and software problems
- use technology to solve problems using critical thinking and problem-solving strategies
- explore how inquiry/problem-solving impact science, technology, engineering and mathematics (STEM) (e.g., design, programming, robotics)

Middle Skills and Concepts – Innovation
Students will

- use technology to express creativity in all content areas
- design, develop, publish and present original, innovative products (e.g., Web pages, video, robotics, online content)
- collaborate with peers, experts and others to develop solutions and innovative products (e.g., design/CAD, troubleshooting, helpdesk, models, systems)
- describe how technological innovation often results when ideas, knowledge or skills are shared within a technology

MIDDLE LEVEL VOCATIONAL STUDIES

Kentucky Core Academic Standards – Vocational Studies – Sixth Grade

The vocational studies program at the sixth grade develops an exploration of careers. This exploration includes the purpose of having a job, concepts of consumer-decision-making, saving money, and connections between learning and working. All content teachers are responsible for providing instruction in the vocational studies area. The vocational program provides opportunities for students to investigate career options and study the relationship between careers and life roles. Students will connect educational achievement to career opportunities and set clear directions and goals for high school and beyond.

Students in the sixth grade vocational studies area develop an understanding of career planning, consumer decision-making and financial literacy that will foster life-long learning. The curriculum relates to consumer decisions, financial literacy, employability and use resources impacting the community and environment. Vocational studies addresses strategies for choosing and preparing a career, skills and work habits needed in future schooling and work. Opportunities are provided for skill development such as: interviewing, writing résumés, and completing applications that are needed for acceptance into college, other post-secondary training or to get a job. The challenge is for students to make a successful transition from school to the world of work, from job to job, across the career life span, and to be productive citizens.

The vocational studies content standards at the sixth grade are directly aligned with Kentucky's **Academic Expectations**. Consumerism and the vocational studies standards are organized around six "Big Ideas" that are important to the discipline of vocational studies. These big ideas are: Consumer Decisions, Financial Literacy, Career Awareness, Exploration/Planning, Employability Skills, and Communication/Technology. The Big Ideas are conceptual organizers for vocational studies and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of vocational studies. The understandings represent the desired results- that focus on learning, and the knowledge students will have to explain or apply. Understandings can be used to frame development of units of study and lessons plans.

Skills and concepts describe the ways students demonstrate their learning and are specific to each grade level. The skills and concepts for vocational studies are fundamental to career exploration and builds on prior learning.

Academic Expectations 2.36, 2.37 and 2.38 bring forward the career exploration in Vocational Studies. Vocational Studies provide a connection to Kentucky's Learning Goals 3 (become self-sufficient individuals) and Learning Goal 4 (become responsible group members). These connections provide a comprehensive link between essential content, skills and abilities important to learning.

Big Idea: Consumer Decisions

Individual and families need to make consumer decisions due to the numerous products/services on the market, multiple advertising techniques, and the need to make responsible financial management decisions. Accessing and assessing consumer information, comparing and evaluating products and services, provides basis for making effective consumer decisions. Consumer decisions influence the use of resources and the impact they have on the community and environment.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- economic and social factors affect consumer decisions.
- culture, media and technology can influence consumer decisions.
- consumer advocacy groups impact consumer's rights and responsibilities.
- consumer actions (e.g., reusing, reducing, recycling) influence the use of resources and impact the environment.
- advocacy is important for personal, family and community health and safety issues.

Big Idea: Consumer Decisions – Continued

Grade 6 Skills and Concepts
Students will

- evaluate economic and social concepts and why they are important for consumer decisions by:
  - analyzing the differences between needs and wants and how individuals and families make choices
  - determining ways in which goods and services used by families impact the environment
  - applying decision-making strategies when buying products
  - comparing and evaluating products and services based on major factors (e.g., price, quality, features) when making consumer decisions
  - comparing the relationship between supply and demand and their role in meeting consumer needs
- investigate how culture, media and technology can influence consumer decisions by:
  - explaining how culture, media and technology impact the family and consumer decision-making
  - identifying and explaining ways consumer's buying practices are influenced by peer pressure, desire for status and advertising techniques (e.g., bandwagon, facts and figures, emotional appeal, endorsement/testimonials)
  - exploring the positive and negative effects of advertising and explain the impact they have on consumer decisions
- explain ways consumer rights and responsibilities are protected (e.g., government agencies, consumer protection agencies, consumer action groups)
- evaluate ways consumer actions (e.g., reusing, reducing, recycling) influence the use of resources and impact the environment by:
  - using resources from home, school, and community that provide accurate and relevant health information
  - describing the influence of environmental factors that positively and negatively affect health
  - researching and describing services provided by environmental agencies (e.g., Soil Conversation, Environmental Protection Agency, KY Department of Natural Resources)
  - investigating conservation issues related to consumption and waste management practices
- use a variety of sources to find examples of jobs carried out by people at school and in the community that support job success
- examine individual, family, and community roles and responsibilities by:
  - investigating a variety of resources and explain ways in which consumers are addressing the effects of renewable resources on the environment
  - describing jobs carried out by people at school and in the community that support success in school

Big Idea: Financial Literacy

Financial literacy provides knowledge so that students are responsible for their personal economic well-being. As consumers, individuals need economic knowledge as a base for making financial decisions impacting short and long term goals throughout one's lifetime. Financial literacy will empower students by providing them with the skills and awareness needed to establish a foundation for a future of financial responsibility and economic independence.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- management of financial resources is needed to meet goals of individuals and families.
- savings plans and budgets are a basic component in making financial decisions.
- various services are provided by financial institutions (e.g., banks, credit unions).
- career choice and lifestyle impact an individual's financial future.

Grade 6 Skills and Concepts

Students will

- evaluate financial management resources and how they are needed to meet goals of individuals and families by:
  - prioritizing financial goals that might affect individuals, families and community
  - explaining various types of expenses (e.g., food, clothing, entertainment) and savings (e.g., piggy bank, bank account, savings bonds)
- investigate savings plans and budgets in making financial decisions by:
  - developing a savings plan that would achieve a specific goal
  - describing basic components of a budget (e.g., income, fixed and flexible expenses, and savings)
  - explaining when and why borrowing is used for the purchase of goods and services
- describe how basic services (e.g., deposits, checking account, savings account) are provided by financial institutions (e.g., banks, credit unions)
- explain how financial goals affect future lifestyle expectations and career choices

Big Idea: Career Awareness, Exploration, Planning

Career awareness, exploration and planning gives students the opportunity to discover the various career areas that exist and introduce them to the realities involved with the workplace. Many factors need to be considered when selecting a career path and preparing for employment. Career awareness, exploration and planning will enable students to recognize the value of education and learn how to plan for careers. The relationship between academics and jobs/careers will enable students to make vital connections that will give meaning to their learning.

Academic Expectations

2.36 Students use strategies for choosing and preparing for a career.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
2.38 Students demonstrate skills such as interviewing, writing resumes, and completing applications that are needed to be accepted into college or other postsecondary training or to get a job.
5.4 Students use a decision-making process to make informed decision among options.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- an individual's work/career encompasses more factors than providing for basic needs.
- jobs/careers reflect both individual and societal needs and vary within communities and regions.
- career choices are available in planning for job/careers in a variety of career clusters.
- the connection between work and academic achievement can influence one's future job/career.
- an Individual Learning Plan (ILP) is an academic and career planning tool.
- self-knowledge is an important part of the career planning process.

Grade 6 Skills and Concepts

Students will

- evaluate why people need to work (e.g., earn money, contribute to community, enhance self-esteem) to meet basic needs (e.g., food, clothing, shelter), provide self-satisfaction, and enjoyment
- investigate how jobs/careers reflect both individual and societal needs and vary within communities and regions by:
  - comparing different job opportunities in the home, school, and community (e.g., home business, flexible schedule)
  - recognizing that the roles of individuals at home, in the workplace, and in the community are constantly changing
- describe a range of academic skills acquired in school (e.g., verbal and nonverbal communication, computer/technical, mathematical) and explain how these skills impact job success and future career opportunities by:
  - researching career choices through the use of technology
  - identifying jobs in career clusters (e.g., Business and Marketing, Communications, Human Services, Social Services, Information Technology, Education, Social Sciences) that vary within and among regions
  - identifying resources (e.g., Internet, newspapers, magazines, counselors) and experiences (e.g., shadowing, mentoring) that can be used for locating job and career information
- develop an educational plan that can impact their future career opportunities by:
  - creating an Individual Learning Plan (ILP) as a tool to explore self-knowledge and academic aptitude and understand that career paths should relate to interests, aptitude, and abilities
  - identifying available postsecondary options (e.g., community and technical colleges, 4-year colleges, military service) used when developing career goals that are included in the Individual Learning Plan (ILP)
- recognize how self-knowledge (e.g., interests, abilities) is helpful when selecting and preparing for a career path and that unique interests may lead to career choices

Big Idea: Employability Skills

Employability skills will focus on student's competencies with their work habits and academic/technical skills that will impact an individual's success in school and workplace. School-to-work transition skills will help students develop interpersonal skills and positive work habits.

Academic Expectations

2.36 Students use strategies for choosing and preparing for a career.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
2.38 Students demonstrate skills such as interviewing, writing résumé and completing applications that are needed to be accepted into college or other postsecondary training or to get a job.
3.8 Students demonstrate the ability to make decisions based on ethical values.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- interpersonal skills impact individual's career choice and success in the workplace.
- attitudes and work habits contribute to success at home, school and work.
- employability skills are important to achieve success in the workplace.
- academic and technical skills contribute to obtaining and succeeding in employment.

Grade 6 Skills and Concepts

Students will

- evaluate how interpersonal skills impact individual's career choice and success in the workplace by:
  - explaining ways to cooperate at home, school and work
  - identifying available resources to locate job openings in the community
  - identifying effective group interaction strategies (e.g., communicating effectively, conflict resolution, compromise) to develop team skills
  - demonstrating how working cooperatively with people of diverse backgrounds and abilities is important to achieve success in the workplace
  - explaining the importance of working cooperatively with others by contributing ideas, suggestions and efforts to complete a task
- explain how attitudes and work habits contribute to success at home, school and work by:
  - describing leadership skills needed in the school, community and the workplace
  - explaining how attitudes and work habits transfer from the home and school to the workplace
  - identifying consequences for actions when disobeying rules and routines when employed
  - explaining the role of authority in school and the workplace
  - identifying the importance of developing good work habits (e.g., attendance, time management, problem-solving)
- describe how employability skills are important to achieve success in the workplace by:
  - explaining the components and complete a job application
  - examining potential job/careers in the community
  - explaining how success in an academic course of study could contribute to the ability to achieve and succeed in employment (e.g., Science/Medicine, Language Arts/Librarian)
- explain how academic and technical skills contribute to obtaining and succeeding in employment by:
  - explaining how effective communication skills (e.g., reading, writing, speaking, and listening) impacts work-related situations and give examples for success at home, school and work
  - explaining how success in a technical course of study could contribute to the achievement in employment (e.g., Computer and Technology Concepts/Web Design, Life Skills/Child Care)

Big Idea: Communication/Technology

Special communication and technology skills are needed for success in schooling and in the workplace. Students will be able to express information and ideas using a variety of technologies in various ways.

Academic Expectations

1.16 Students use computers and other kinds of technology to collect, organize, and communicate information and ideas.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
2.38 Students demonstrate skills such as interviewing, writing resumes, and completing applications that are needed to be accepted into college or other postsecondary training or to get a job.

Grade 6 Enduring Knowledge – Understandings

Students will understand that

- scientific and technological changes can impact a variety of careers.
- technology skills can enhance learning and be used in developing a career plan.
- communication skills are essential in seeking and maintaining jobs/careers.

Grade 6 Skills and Concepts

Students will

- explain how scientific and technological changes impact specific careers (e.g., Nursing, Meteorologist, Radio and Television Broadcaster, Journalist)
- evaluate how technology tools (e.g., computer programs, Internet, email, cell phones) are used in homes, schools and jobs by:
  - explaining how technology provides access to information and resources at home, school and the workplace
  - developing components of an on-line Individual Learning Plan (ILP) to provide a focus for academic and career planning
- demonstrate how communication skills are essential in seeking and maintaining jobs/careers by:
  - describing the role of technology within a community in maintaining safe and healthy living environment
  - demonstrating how nonverbal communication skills (e.g., body language, facial expression, posture, dress) can impact relationships at home, school and the workplace
  - explaining how written communication skills are used at school and in the workplace

Kentucky Core Academic Standards – Vocational Studies – Seventh Grade

The vocational studies program at the seventh grade develops an exploration of careers. This exploration includes the purpose of having a job, concepts of consumer-decision-making, saving money, and connections between learning and working. All content teachers are responsible for providing instruction in the vocational studies area. The vocational studies program provides opportunities for students to investigate career options and study the relationship between careers and life roles. Students will connect educational achievement to career opportunities and set clear directions and goals for high school and beyond.

Students in the seventh grade vocational studies area develop an understanding of career planning, consumer decision-making and financial literacy that will foster life-long learning. The curriculum relates to consumer decisions, financial literacy, employability and use resources impacting the community and environment. Vocational studies addresses strategies for choosing and preparing a career, skills and work habits needed in future schooling and work. Opportunities are provided for skill development such as: interviewing, writing résumés, and completing applications that are needed for acceptance into college, other post-secondary training or to get a job. The challenge is for students to make a successful transition from school to the world of work, from job to job, across the career life span, and to be productive citizens.

The vocational studies content standards at the seventh grade are directly aligned with Kentucky's **Academic Expectations**. The vocational studies standards are organized around five "Big Ideas" that are important to the discipline of vocational studies. These big ideas are: Consumer Decisions, Financial Literacy, Career Awareness/Exploration/Planning, Employability Skills, and Communication/Technology. The Big Ideas are conceptual organizers for vocational studies and are the same at each grade level. This ensures students have multiple opportunities throughout their school career to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of vocational studies. The understandings represent the desired results- that focus on learning, and the knowledge students will have to explain or apply. Understandings can be used to frame development of units of study and lessons plans.

Skills and concepts describe the ways students demonstrate their learning and are specific to each grade level. The skills and concepts for vocational studies are fundamental to career exploration and builds on prior learning.

Academic Expectations 2.36, 2.37 and 2.38 bring forward the career exploration in Vocational Studies. Vocational Studies provide a connection to Kentucky's Learning Goals 3 (become self-sufficient individuals) and Learning Goal 4 (become responsible group members). These connections provide a comprehensive link between essential content, skills and abilities important to learning.

Big Idea: Consumer Decisions

Individual and families need to make consumer decisions due to the numerous products/services on the market, multiple advertising techniques, and the need to make responsible financial management decisions. Accessing and assessing consumer information, comparing and evaluating products and services, provides basis for making effective consumer decisions. Consumer decisions influence the use of resources and the impact they have on the community and environment.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- economic and social factors affect consumer decisions.
- culture, media and technology can influence consumer decisions.
- consumer advocacy groups impact consumer's rights and responsibilities.
- consumer actions (e.g., reusing, reducing, recycling) influence the use of resources and impact the environment.
- a variety of print and electronic resources are available in the home, school, and community that provide health and safety information.
- advocacy is important for personal, family and community health and safety issues.

Grade 7 Skills and Concepts

Students will

- evaluate economic and social concepts and why they are important for consumer decisions by:
  - examining the use of economic principles and resources when making choices to satisfy needs and wants of individuals and families
  - comparing and evaluating products and services based on major factors (e.g., brand name, price, quality, features, availability) when making consumer decisions
  - comparing the relationship between supply and demand and their role in meeting consumer needs
  - applying decision-making strategies when buying products
  - determining ways in which goods and services used by families impact the environment
- investigate how culture, media and technology impact the family and consumer decision making by:
  - explaining ways consumer's buying practices are influenced by peer pressure, desire for status and advertising techniques (e.g., bandwagon, facts and figures, emotional appeal, endorsement/testimonials)
  - exploring the positive and negative effects of advertising techniques (e.g., free samples, coupons, use of gimmicks, misleading or false information) and explain the impact they have on consumer decisions
- explain ways consumer rights and responsibilities are protected (e.g., government agencies, consumer protection agencies, consumer action groups)
- evaluate ways consumer actions (e.g., reusing, reducing, recycling) influence the use of resources and impact the environment by:
  - describing the influence of environmental factors that positively and negatively affect health
  - researching local and state environmental issues that address consumption for conservation and waste management practices
- use print and electronic resources from home, school, and community that provide accurate and relevant health and safety information
- use a variety of sources to find examples of jobs carried out by people at school and in the community that support job success

Big Idea: Financial Literacy

Financial literacy provides knowledge so that students are responsible for their personal economic well-being. As consumers, individuals need economic knowledge as a base for making financial decisions impacting short and long term goals throughout one's lifetime. Financial literacy will empower students by providing them with the skills and awareness needed to establish a foundation for a future of financial responsibility and economic independence.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- management of financial resource practices is needed to meet goals of individuals and families.
- saving plans (e.g., investments, savings accounts, stocks, bonds) and budgets are economic practices in making financial decisions.
- financial institutions (e.g., banks, brokerage firms, credit unions) provide consumer services that help in achieving financial goals.
- career choice and lifestyle impacts an individual's financial future.

Grade 7 Skills and Concepts

Students will

- evaluate financial management practices including budgeting, savings, banking services (e.g., purpose of checking and savings accounts, debit/credit), and investing (e.g., general types and purpose of investing) and explain why these practices are important in achieving personal financial goals by:
  - constructing and using a personal spending/savings plan and evaluate according to short- and long-term goals
  - explaining the difference between credit and debit cards
- investigate savings plans and budgets in making financial decisions by:
  - describing basic components of a budget (e.g., income, fixed and flexible expenses, and savings)
- explain how financial institutions (e.g., banks, brokerage firms, credit unions) provide consumer services that help in achieving financial goals by:
  - analyzing the steps in opening and using a checking and savings account
- develop financial goals for the future based on one's lifestyle expectations and career choices

Big Idea: Career Awareness, Exploration, Planning

Career awareness, exploration and planning gives students the opportunity to discover the various career areas that exist and introduce them to the realities involved with the workplace. Many factors need to be considered when selecting a career path and preparing for employment. Career awareness, exploration and planning will enable students to recognize the value of education and learn how to plan for careers. The relationship between academics and jobs/careers will enable students to make vital connections that will give meaning to their learning.

Academic Expectations

2.36 Students use strategies for choosing and preparing for a career.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
2.38 Students demonstrate skills such as interviewing, writing resumes, and completing applications that are needed to be accepted into college or other postsecondary training or to get a job.
5.4 Students use a decision-making process to make informed decision among options.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- an individual's work encompasses more factors than providing for basic needs.
- jobs/careers reflect both individual and societal needs and vary within communities and regions.
- career choices are available in planning for job/careers in a variety of career clusters.
- the connection between work and academic achievement can influence one's future job/career.
- an Individual Learning Plan (ILP) is an academic and career planning tool.
- self-knowledge is an important part of the career planning process.

Big Idea: Career Awareness, Exploration, Planning - Continued

Grade 7 Skills and Concepts
Students will

- explain why people need to work (e.g., social contacts, make purchases for necessities, expand knowledge, develop skills to meet basic needs (food, clothing, shelter) and for personal satisfaction and enjoyment
- evaluate how jobs/careers reflect both individual and societal needs and vary within communities and regions by:
  - comparing and contrasting the many factors that must be considered when selecting and preparing for employment or a career path
  - recognizing that the roles of individuals at home, in the workplace, and in the community are constantly changing
- describe why attaining academic skills are important in both school and the workplace by:
  - researching career choices through the use of technology
  - describing how job and career opportunities (e.g., veterinarian, sales associate, interior designer, meteorologist, physical therapist) are grouped within career clusters (e.g., Agriculture, Arts & Humanities, Business & Marketing, Communications, Construction, Education, Health Science, Human Services, Information Technology, Manufacturing, Public Services, Science & Mathematics, Social Sciences, Transportation) that vary within and among communities and regions
- develop an educational plan that can impact their future career opportunities by:
  - accessing and using resources for locating job/career information career paths related to interests, aptitude (e.g., academic skills), and abilities
  - updating the Individual Learning Plan (ILP) as a tool to explore self-knowledge and academic aptitude and understand that career paths should relate to your individual traits (e.g., interests, abilities, learning styles)
  - exploring and describing available postsecondary options (e.g., community technical colleges, 4-year colleges, military service) to develop career goals that are included in the Individual Learning Plan (ILP)
- recognize how self-knowledge (e.g., interests, abilities) is helpful when selecting and preparing for a career path and that unique interests may lead to career choices

Big Idea: Employability Skills

Employability skills will focus on student's competencies with their work habits and academic/technical skills that will impact an individual's success in school and workplace. School-to-work transition skills will help students develop interpersonal skills and positive work habits.

Academic Expectations

2.36 Students use strategies for choosing and preparing for a career.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
2.38 Students demonstrate skills such as interviewing, writing résumé and completing applications that are needed to be accepted into college or other postsecondary training or to get a job.
3.9 Students demonstrate the ability to make decisions based on ethical values.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- interpersonal skills impact individual's career choice and success in the workplace.
- attitudes and work habits contribute to success at home, school and work.
- employability skills are important to achieve success in the workplace.
- academic and technical skills contribute to obtaining and succeeding in employment.

Grade 7 Skills and Concepts

Students will

- evaluate how interpersonal skills impact individual's career choice and success in the workplace by:
  - identifying effective group interaction strategies (e.g., communicating effectively, conflict resolution, compromise) to develop team skills
  - evaluating the importance of working cooperatively with people of diverse backgrounds and abilities to achieve success in the workplace
  - designing a plan for working cooperatively with others by contributing ideas, suggestions and efforts to complete a task
  - explaining how effective verbal and nonverbal communication skills impacts work-related situations
- explain how attitudes and work habits contribute to success at home, school and work by:
  - demonstrating leadership skills by participating in co/extra-curricular activities, home, school and community
  - explaining how attitudes and work habits transfer from the home and school to the workplace
  - describing consequences for actions when disobeying rules and routines at the workplace
  - explaining the role of authority in school and the workplace
  - explaining the importance of developing good work habits (e.g., loyalty, initiative, assuming responsibility, time management, problem-solving)
- describe how employability skills are important to achieve success in the workplace by:
  - using available resources for locating job openings
  - using established criteria to evaluate a completed job application
  - using technology to research job/careers in the community
- examine academic and technical skills and how they contribute to obtaining and succeeding in employment by:
  - explaining how success in an academic course of study could contribute to the achievement and success in employment (e.g., Math/Teacher, Social Studies/Politician)
  - explaining how success in a technical course of study could contribute to the achievement and success in employment (e.g., AgriScience/Game Warden, Survey of Technology/Engineering)

Big Idea: Communication/Technology

Special communication and technology skills are needed for success in schooling and in the workplace. Students will be able to express information and ideas using a variety of technologies in various ways.

Academic Expectations

1.16 Students use computers and other kinds of technology to collect, organize, and communicate information and ideas.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
2.38 Students demonstrate skills such as interviewing, writing resumes, and completing applications that are needed to be accepted into college or other postsecondary training or to get a job.

Grade 7 Enduring Knowledge – Understandings

Students will understand that

- scientific and technological changes can impact a variety of careers.
- technology skills can enhance learning and be used in developing a career plan.
- communication skills are essential in seeking and maintaining jobs/careers.

Grade 7 Skills and Concepts

Students will

- explain how scientific and technological changes impact specific careers (e.g., Construction Worker, Automotive Technician, Food Service industry)
- evaluate the purposes of technology tools (e.g., word processing, databases, spreadsheets, scanners, robots, personal electronic devices, Internet, email) and analyze how these impact productivity in homes, schools and jobs by:
  - explaining how technology provides access to information and resources at home, school and the workplace
  - continuing the development of the on-line Individual Learning Plan (ILP) to provide a focus for academic and career planning
- examine how communication skills are essential in seeking and maintaining jobs/careers by:
  - explaining skills used in classroom and workplace: letter writing, nonverbal/verbal communication skills and interview skills
  - using different formats to summarize and communicate orally and in written form for use in the classroom and the workplace

Kentucky Core Academic Standards –Vocational Studies – Eighth Grade

The vocational studies program at the eighth grade develops an exploration of careers. This exploration includes the purpose of having a job, concepts of consumer-decision-making, saving money, and connections between learning and working. All content teachers are responsible for providing instruction in the vocational studies area. The vocational studies program provides opportunities for students to investigate career options and study the relationship between careers and life roles. Students will connect educational achievement to career opportunities and set clear directions and goals for high school and beyond.

Students in the eighth grade vocational studies area develop an understanding of career planning, consumer decision-making and financial literacy that will foster life-long learning. The curriculum relates to consumer decisions, financial literacy, employability and use resources impacting the community and environment. Vocational studies addresses strategies for choosing and preparing a career, skills and work habits needed in future schooling and work. Opportunities are provided for skill development such as: interviewing, writing résumés, and completing applications that are needed for acceptance into college, other post-secondary training or to get a job. The challenge is for students to make a successful transition from school to the world of work, from job to job, across the career life span, and to be productive citizens.

The vocational studies content standards at the eighth grade are directly aligned with Kentucky's **Academic Expectations**. The vocational studies standards are organized around five "Big Ideas" that are important to the discipline of vocational studies. These big ideas are: Consumer Decisions, Financial Literacy, Career Awareness/Exploration/Planning, Employability Skills, and Communication/Technology. The Big Ideas are conceptual organizers for vocational studies and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of vocational studies. The understandings represent the desired results- that focus on learning, and the knowledge students will have to explain or apply. Understandings can be used to frame development of units of study and lessons plans.

Skills and concepts describe the ways students demonstrate their learning and are specific to each grade level. The skills and concepts for Vocational Studies are fundamental to career exploration and builds on prior learning.

Academic Expectations 2.36, 2.37 and 2.38 bring forward the career exploration in Vocational Studies. Vocational Studies provide a connection to Kentucky's Learning Goals 3 (become self-sufficient individuals) and Learning Goal 4 (become responsible group members). These connections provide a comprehensive link between essential content, skills and abilities important to learning.

Big Idea: Consumer Decisions

Individual and families need to make consumer decisions due to the numerous products/services on the market, multiple advertising techniques, and the need to make responsible financial management decisions. Accessing and assessing consumer information, comparing and evaluating products and services, provides basis for making effective consumer decisions. Consumer decisions influence the use of resources and the impact they have on the community and environment.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- social factors and economic principles affect consumer decisions.
- culture, media and technology can influence consumer decisions.
- consumer management practices relating to the human, economic, and environmental resources are needed to meet the goals of individual and families.
- consumer advocacy groups impact consumer's rights and responsibilities.
- consumer actions (e.g., reusing, reducing, recycling) influence the use of resources and impact the environment.
- a variety of print and electronic resources are available in the home, school, and community that provide health and safety information.
- advocacy is important for personal, family and community health and safety issues.

Big Idea: Consumer Decisions – Continued

Grade 8 Skills and Concepts
Students will

- evaluate social factors and economic principles and their affect on consumer decisions by:
  - examining the use of economic principles and resources in making choices to satisfy needs and wants of individuals and families
  - comparing and evaluating products and services based on major factors (e.g., brand name, price, quality, features, availability) when making consumer decisions
  - comparing the relationship between supply and demand and their role in meeting consumer needs
  - analyzing the interrelationship between the economic system and consumer actions
  - apply decision-making strategies when buying products based on price, features, and quality
  - identifying practices that allow families to maintain economic self-sufficiency
- investigate how culture, media and technology impact the family and consumer decision making by:
  - exploring and using technology to access consumer information (e.g., products, services, and resources)
  - developing criteria to evaluate consumer's buying practices that are influenced by peer pressure, desire for status and advertising techniques (e.g., bandwagon, facts and figures, emotional appeal, endorsement/testimonials)
- investigate consumer advocacy groups and the impact of consumer's rights and responsibilities by:
  - examining economic impacts of laws and regulations that pertain to consumers and providers of services
  - identifying and explaining how consumer rights and responsibilities are protected (e.g., government agencies, consumer protection agencies, consumer action groups)
- evaluate ways consumer actions (e.g., reusing, reducing, recycling) influence the use of resources and impact the environment by:
  - describing the influence of environmental factors that positively and negatively affect health
  - researching local and state environmental issues that address consumption for conservation and waste management practices
- use print and electronic resources from home, school, and community that provide accurate and relevant health information
- locate and interpret career information and job opportunities in the community that support job success

Big Idea: Financial Literacy

Financial literacy provides knowledge so that students are responsible for their personal economic well-being. As consumers, individuals need economic knowledge as a base for making financial decisions impacting short and long term goals throughout one's lifetime. Financial literacy will empower students by providing them with the skills and awareness needed to establish a foundation for a future of financial responsibility and economic independence.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
5.4 Students use a decision-making process to make informed decisions among options.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- management of financial resource practices is needed to meet goals of individuals and families.
- saving plans (e.g., investments, savings accounts, stocks, bonds) and budgets are economic practices in making financial decisions.
- saving plans (e.g., investments, savings accounts, stocks, bonds) and budgets are economic practices in making financial decisions.
- financial institutions (e.g., banks, brokerage firms, credit unions) provide consumer services that help in achieving financial goals.
- career choice and lifestyle impacts an individual's financial future.

Grade 8 Skills and Concepts

Students will

- evaluate financial management practices including budgeting, savings, banking services (e.g., purpose of checking and savings accounts, debit/credit), and investing (e.g., general types and purpose of investing) and explain why these practices are important in achieving personal financial goals by:
  - describing the risks and responsibilities associated with using credit
- investigate savings plans and budgets in making financial decisions by:
  - constructing and using a personal spending/savings plan and evaluate according to short- and long-term goals
  - analyzing basic components of a budget (e.g., income, fixed and flexible expenses, and savings)
- explain how financial institutions (e.g., banks, brokerage firms, credit unions) provide consumer services that help in achieving financial goals by:
  - analyzing the steps in opening and using a checking and savings account
- develop financial goals for the future based on one's lifestyle expectations and career choices

Big Idea: Career Awareness, Exploration, Planning

Career awareness, exploration and planning gives students the opportunity to discover the various career areas that exist and introduce them to the realities involved with the workplace. Many factors need to be considered when selecting a career path and preparing for employment. Career awareness, exploration and planning will enable students to recognize the value of education and learn how to plan for careers. The relationship between academics and jobs/careers will enable students to make vital connections that will give meaning to their learning.

Academic Expectations

2.36 Students use strategies for choosing and preparing for a career.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
2.38 Students demonstrate skills such as interviewing, writing resumes, and completing applications that are needed to be accepted into college or other postsecondary training or to get a job.
5.4 Students use a decision-making process to make informed decision among options.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- an individual's work encompasses more factors than providing for basic needs.
- jobs/careers reflect both individual and societal needs and vary within communities and regions.
- career choices are available in planning for job/careers in a variety of career clusters.
- the connection between work and academic achievement can influence one's future job/career.
- an Individual Learning Plan (ILP) is an academic and career planning tool.

Grade 8 Skills and Concepts

Students will

- analyze why people need to work (e.g., earn money, contribute to society, develop identity as a worker, enhance self-esteem) to meet basic needs (food, clothing, shelter) and for personal satisfaction and enjoyment by:
  - comparing and contrasting the many factors that must be considered when selecting and preparing for employment or a career path
- explain how jobs/careers reflect both individual and societal needs
- analyze the direct relationship of academic/technical skills, extracurricular activities, and community experiences to career preparation by:
  - researching career choice through the use of technology
- create an educational plan that will can impact their future career opportunities by:
  - describing how job and career opportunities (e.g., veterinarian, sales associate, interior designer, meteorologist, physical therapist) are grouped together in career clusters (e.g., Agriculture, Arts & Humanities, Business & Marketing, Communications, Construction, Education, Health Science, Human Services, Information Technology, Manufacturing, Public Services, Science & Mathematics, Social Sciences, Transportation) that vary within and among communities and regions
  - accessing and evaluating resources for locating job/career information career paths related to interests, aptitude (e.g., academic skills), and abilities
  - creating and updating an Individual Learning Plan (ILP) as a tool to explore self-knowledge and academic aptitude and understand that career paths should relate to your individual traits (e.g., interests, abilities, learning styles)
  - explaining with examples postsecondary options (e.g., community technical colleges, 4-year colleges, military service) used when developing career goals that are included in the Individual Learning Plan (ILP)
- analyze how self-knowledge (e.g., interests, abilities) is helpful when selecting and preparing for a career path and that unique interests may lead to career choices

Big Idea: Employability Skills

Employability skills will focus on student's competencies with their work habits and academic/technical skills that will impact an individual's success in school and workplace. School-to-work transition skills will help students develop interpersonal skills and positive work habits.

Academic Expectations

2.36 Students use strategies for choosing and preparing for a career.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
2.38 Students demonstrate skills such as interviewing, writing résumé and completing applications that are needed to be accepted into college or other postsecondary training or to get a job.
3.6 Students demonstrate the ability to make decisions based on ethical values.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- interpersonal skills impact individual's career choice and success in the workplace.
- attitudes and work habits contribute to success at home, school and work.
- employability skills are important to achieve success in the workplace.
- academic and technical skills contribute to obtaining and succeeding in employment.

Grade 8 Skills and Concepts

Students will

- evaluate how interpersonal skills impact individual's career choice and success in the workplace by:
  - analyzing and evaluating the role of each participant's contribution in a team setting
  - evaluating the importance of working cooperatively with people of diverse backgrounds and abilities to achieve success in the workplace
  - designing a plan for working cooperatively with others by contributing ideas, suggestions and efforts to complete a task
  - explaining how effective verbal and nonverbal communication skills impacts work-related situations
- examine how attitudes and work habits contribute to success at home, school and work by:
  - identifying effective group interaction strategies (e.g., communicating effectively, conflict resolution, compromise) to develop team skills (e.g., goal-setting, questioning, dividing work)
  - demonstrating leadership skills by participating in co/extra-curricular activities, home, school and community
  - explaining how attitudes and work habits transfer from the home and school to the workplace
  - demonstrating and explaining how various forms of etiquette are used in the home, school, community, and workplace
  - describing consequences for actions when disobeying rules and routines at the workplace
  - explaining the role of authority in school and the workplace
  - explaining the importance of developing good work ethics/habits (e.g., initiative, time management, respect, self-discipline, problem-solving) that support career retention and advancement
- explain how employability skills are important to achieve success in the workplace by:
  - using available resources for locating job openings
  - using established criteria to evaluate a completed job application
- explain how academic and technical skills contribute to obtaining and succeeding in employment by:
  - using technology to research job/careers in the community
  - explaining how success in an academic course of study could contribute to the achievement and success in employment (e.g., Arts and Humanities/Museum Curator, Health Education/Personal Trainer)
  - explaining how success in a technical course of study could contribute to the achievement and success in employment (e.g., Career Choices/Nurse, Business/Marketing Career Exploration/Advertising Manager)

Big Idea: Communication/Technology

Special communication and technology skills are needed for success in schooling and in the workplace. Students will be able to express information and ideas using a variety of technologies in various ways.

Academic Expectations

1.16 Students use computers and other kinds of technology to collect, organize, and communicate information and ideas.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
2.38 Students demonstrate skills such as interviewing, writing resumes, and completing applications that are needed to be accepted into college or other postsecondary training or to get a job.

Grade 8 Enduring Knowledge – Understandings

Students will understand that

- scientific and technological changes can impact a variety of careers.
- technology skills can enhance learning and be used in developing a career plan.
- communication skills are essential in seeking and maintaining jobs/careers.

Grade 8 Skills and Concepts

Students will

- explain how jobs/careers (e.g., Physical Therapist, Radio and Television Broadcaster, Web Designer) have been created as a result of scientific and technological advancements
- evaluate the purpose of technology tools (e.g., multi-media, Internet, digital camera, teleconferencing, debit/credit cards) and analyze how these impact productivity in homes, schools and jobs by:
  - explaining how technology provides access to information and resources at home, school and the workplace
  - describing the role of technology within a community in maintaining safe and healthy living environment
  - updating the Individual Learning Plan (ILP) to provide a focus for academic and career planning
- explain how communication skills are essential in seeking and maintaining jobs/careers by:
  - describing effective speaking and listening skills used in a job interview
  - explaining skills used to seek, obtain, maintain, and change jobs/careers: written communication, nonverbal/verbal communication skills and interview skills
  - using different formats to summarize and communicate orally and in written form for use in the classroom and the workplace

HIGH SCHOOL EDUCATION

High School

The high school program will continue to build on rigorous and relevant learning experiences from the middle level to prepare students for successful transition to adult life.

The high school curriculum must reflect the belief that all students are capable of learning at high levels and ensure that all students have access to an academically rigorous curriculum that leads to college and work place readiness upon graduation. The high school program should be broader than the content outlined as the state minimum for high school graduation in the *Kentucky Core Academic Standards*. The curriculum supports students in the acquisition of rigorous core knowledge, skills, habits and attitudes. Courses may be more traditional in nature or a local board of education may substitute an integrated, applied, interdisciplinary or technical/occupational course for a required course that prepares a student for a career path based on the student's Individual Learning Plan (ILP). Such substitutions provide high schools with the opportunity to offer courses that have the same academic rigor as traditional courses but deliver the content through more contextual, hands-on approaches.

Each student must be supported through transitions during their secondary experience with an ILP that provides opportunity for learning in a real-world context relevant to the student's career goals. Every student should be led through a process of academic and career awareness, exploration and planning. Postsecondary planning shall be a core activity within the high school as part of a comprehensive advising and guidance program.

Students shall be supported in the ILP through an advising and guidance process that fosters meaningful, supportive relationships with peers, highly qualified educators and postsecondary education and business communities to foster success beyond high school.

Credits for High School Graduation

A high school graduation credit may be awarded in either of two ways: Carnegie units (defined as at least 120 hours of instructional time in one subject) or performance-based credits, defined at the local level regardless of the number of instructional hours. Districts and schools are accountable for making sure that each student's education program includes the minimum content standards as specified in the *Kentucky Core Academic Standards* and provides the student with the opportunity to learn the standards including appropriate supports based on the individual learning needs of a student.

The Kentucky Board of Education identifies the minimum credits required for graduation (704 KAR 3:305) and the local district sets the local requirements in their district graduation policy.

Performance-Based Credit

Performance-Based Credits refer to credits earned by a student outside of the traditional structure of a 120 hour instructional course. In order to award such credits, districts must establish a policy for a performance-based system that:

- provides procedures for developing and amending performance-based credit courses
- identifies related performance descriptors and assessments
- establishes grading and reporting procedures
- specifies content standards as addressed in Kentucky's *Kentucky Core Academic Standards*
- identifies the extent to which end-of-course assessments will be used
- allows for students to demonstrate proficiency and earn credit for learning acquired outside of school or in prior learning experiences
- allows students to pursue internships, cooperative learning experiences and other learning experiences in the school and community

Performance-based credit may be awarded for these types of courses:

- course work that allows satisfactory demonstration of learning
- course work that constitutes satisfactory demonstration of learning in a course for which the student failed to earn credit when the course was previously taken
- standards-based portfolios, senior year or capstone projects
- standards-based online or other technology-mediated courses
- standards-based dual credit or other equivalency courses
- standards-based internship, cooperative learning experience or other supervised learning experience in the school and the community

High School Credit Earned in Middle School
It is expected that most students will earn these credits during their high school years. However, local school districts may offer these courses to middle level students if the following criteria are met:

- the content and the rigor of the course is the same as established in the *Kentucky Core Academic Standards*
- the students demonstrate mastery of the middle level content as specified in the *Kentucky Core Academic Standards*
- the district has criteria in place to make reasonable determination that the middle level student is capable of success in the high school course
- the middle level course is taught by teachers with either secondary or middle level certification with appropriate content specialization

Postsecondary Credit Earned in High School
Dual credit (articulated credit) opportunities allow students to pursue both high school and postsecondary credit-bearing work prior to their graduation from high school. A local board of education shall maintain a copy of its policy on high school graduation requirements that may contain policy regarding dual credit opportunities.

College Board Advanced Placement (AP) courses provide opportunities for students to access challenging curricula that facilitate high-level attainment of Kentucky's learning goals. The AP program provides high school students with opportunities to earn college credits at universities and colleges across the country.

AP courses require use of standardized, prescribed college-level curriculum. Course materials and resources are selected from among identified college-level texts in the appropriate content area.

The College Board has no restrictions on the age/grade level of students who take Advanced Placement courses and/or Advanced Placement examinations. College credit is solely based on the level of performance on each examination. Access to the courses may be achieved through regular classes, virtual opportunities, independent study or other means.

Dual enrollment opportunities allow students to pursue postsecondary credit bearing work prior to their graduation from high school. This differs from dual credit in that students are earning only postsecondary credit, not high school credit, for that course.

High School Credits Earned through Career and Technical Education
High school graduation requirements allow for interdisciplinary or applied courses to substitute for specific academic courses required for graduation. This option provides high schools the opportunity to offer courses that have the same academic rigor as traditional courses but deliver the content through more contextual, applied, hands-on approaches. Students may earn required high school credits through Career and Technical Education interdisciplinary or applied courses that include the minimum required content standards specified in the *Kentucky Core Academic Standards*.

Other Credits Required

In addition to the minimum credit requirements associated with the content standards as provided in the Kentucky Core Academic Standards, seven credits including four based on the student's Individual Learning Plan are also required. These seven credits must be based on academic content and learning goals for students.

HIGH SCHOOL ARTS AND HUMANITIES

Kentucky Core Academic Standards – Arts and Humanities – High School

At the high school level, students may choose to specialize in one or more art forms. Specialization will enable students to study an art form in an in-depth manner and work toward achieving proficiency and mastery in creating, performing, and responding to their chosen art form. Students who specialize in an art form will participate in performance-based arts courses designed to develop skills and understanding that will enable students to use the art form as a high level communication tool. This is accomplished through the development of creativity and production or performance skills. Performance-based courses also connect the arts with their historical and cultural contexts as students study exemplary works and learn the impact of time, place and personality on the arts. In addition, these courses promote an understanding of the interrelationships among the arts disciplines and connections with other academic content areas.

Students choosing not to specialize in an art form will move beyond the grounding in the arts achieved at the middle school level toward proficiency in the arts. Emphasis for these students should be placed on exposing students to a variety of arts through active experiences in all four art forms, and developing further understanding and appreciation of the historical and cultural significance of dance, drama/theatre, music and visual arts. A higher emphasis on the process of responding to the arts is a natural outcome of this more general approach to arts and humanities education, however creating and performing the arts remain as critical processes in the general education of all students and promote deep understanding and appreciation of the arts.

The arts and humanities content standards at the high school level are directly aligned with Kentucky's broad standards called the **Academic Expectations**. The **Academic Expectations** are directly related to the *National Standards for Arts Education (1994)*.

Arts and humanities grade level content standards are organized around five “Big Ideas” that are important to the arts disciplines. The five big ideas in arts and humanities are: Structures in the Arts, Humanity in the Arts, Purposes for Creating the Arts, Processes in the Arts and Interrelationships Among the Arts. The Big Ideas are conceptual organizers for arts and humanities and are similar at each grade level to ensure students have multiple opportunities throughout their school careers to develop skills and concepts linked to each Big Idea.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of the arts and humanities. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for arts and humanities are fundamental to arts literacy and proficiency, and build on prior learning.

The three arts processes of creating, performing and responding to the arts provide a basis for deep understanding and appreciation of the arts. In the processes of creating and performing, a variety of technologies are employed, ranging from primitive technologies to cutting edge electronic and digital technologies.

Creating involves planning and creating new music, dance, drama/theatre or visual arts, or it may involve improvising in music, dance or drama/theatre. Improvising is the composing of new music, reciting/acting new dramatic material, or creating new dance movements on the spur of the moment.

Performing is limited to the performing arts of music, dance and drama/theatre. Performing involves presenting previously created works for an audience. Although the process of performing involves following a creative plan conceived by a composer, playwright or choreographer, there is still opportunity for creative interpretations in the performance.

Responding to the arts involves responses on multiple levels. The arts are a tool for communication and are capable of delivering meaning through literal and emotional content. Responding to the emotional content of artworks involves actually feeling the emotion(s) set forth by the creator. Responding can also involve intellectual analysis of works of art in regard to their design, effectiveness and quality.

Academic Expectations 2.25 and 2.26 bring forward the study of the humanities aspects of the arts. The arts reflect time, place, and society and offer a mirror to the human experience. The powerful communication qualities of the arts also enable them to be a factor that can drive the human experience. Study of historical and cultural contexts in the arts is an essential and integral part of instruction across all the art forms and across all grade levels.

High school humanities study begins with a review of cultures and periods introduced in middle school level. This is to reinforce learning and ensure understanding of cultures and periods that will be addressed at the high school level. High school study will again return to arts of various world civilizations, but will focus more on world civilization from 1500 A. D. to the present. United States study will incorporate the time period from the reconstruction after the Civil War to the present. Students will also study unique art forms of Asia and the Middle East. Students will examine historical style periods in the arts through study of specific time periods and styles, and by studying exemplary works of art and exemplary artists of each historical period.

Big Idea: Structure in the Arts

Understanding of the various structural components of the arts is critical to the development of other larger concepts in the arts. Structures that artists use include elements and principles of each art form, tools, media and subject matter that impact artistic products and specific styles and genre that provide a context for creating works. It is the artist's choice of these structural components in the creative process that results in a distinctively expressive work. Students make choices about how to use structural organizers to create meaningful works of their own. The more students understand, the greater their ability to produce, interpret or critique artworks from other artists, cultures and historical periods.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.23 Students analyze their own and others' artistic products and performances using accepted standards.

High School Enduring Knowledge – Understandings

Students will understand that

- the elements of music, dance and drama are intentionally applied in creating and performing.
- the elements and principles of design of visual art are intentionally applied in creating works of art.
- responding to or critiquing works of art involves an understanding of elements, principles and structures appropriate to each area of the arts.
- existing and emerging technologies can inspire new applications of structural components.

High School Skills and Concepts – Music

Students will

- use appropriate terminology to analyze and evaluate the use of elements in a variety of musical compositions (rhythm, tempo, melody, harmony, form, timbre, dynamics)
- apply the elements of music with technical accuracy and expression while performing, singing, playing instruments, moving, listening, reading music, writing music and creating music independently and with others
- listen to and analyze how changing different elements results in different musical effects
- recognize, describe, and compare various musical forms (rondo, theme and variation, opera – overture, aria, recitative, movements of classical symphony)

High School Skills and Concepts – Dance

Students will

- use appropriate terminology to analyze and evaluate the use of elements in a variety of dance (space, time, force)
- apply elements of dance and principles of movement (e.g., balance, initiation of movement, weight shift) to:
  - expressively create and perform a range of patterns of movement
  - analyze and evaluate the use of choreographic forms in dance (theme and variation, rondo, narrative)
  - analyze and describe how themes in dances and styles of dance communicate ideas and feelings
  - identify and explain characteristics of dance styles (ballet, tap, jazz, modern)
- describe and analyze the relationships between and among music, costumes, lighting, props/scenery and choreography

Big Idea: Structure in the Arts – Continued

High School Skills and Concepts – Drama/Theatre
Students will

- use appropriate terminology to analyze and evaluate the use of elements of drama (literary, technical, performance) in a variety of dramatic works
- use the elements of drama to:
  - expressively create and perform dramatic works
  - explain how technical elements (staging, scenery, props, costumes, make-up, lighting, sound) and performance elements (acting, speaking, nonverbal expression) create mood, believable characters and advance the message being communicated
- use print and non-print sources to explore and evaluate a variety of dramatic works (e.g., theater and dramatic media – film, television, electronic media)

High School Skills and Concepts – Visual Arts
Students will

- use appropriate terminology to analyze and evaluate the use of elements of art (line, shape, form, texture, color) and principles of design (e.g., emphasis, pattern, balance, contrast) in a variety of visual artworks
- expressively use the elements of art, principles of design and a variety of processes in creating artworks
- apply organizational structures and evaluate what makes them effective or not effective in communicating ideas
- analyze and evaluate the use of elements of art (e.g., line, shape, color properties, color schemes/groups, form, texture, space, value) and principles of design (e.g., repetition, emphasis, pattern, balance, contrast, rhythm, proportion, movement) in a variety of two and three dimensional artworks
- identify and use a variety of subject matter in viewing and creating visual artworks (representational – e.g., landscape, portrait, still life, nonrepresentational – e.g., abstract, non-objective)

Big Idea: Humanity in the Arts

The arts reflect the beliefs, feelings and ideals of those who create them. Experiencing the arts allows one to experience time, place and/or personality. By experiencing the arts of various cultures, students can actually gain insight into the beliefs, feelings and ideas of those cultures. Students also have the opportunity to experience how the arts can influence society through analysis of arts in their own lives and the arts of other cultures and historical periods. Studying the historical and cultural stylistic periods in the arts offers students an opportunity to understand the world past and present and to learn to appreciate their own cultural heritage. Looking at the interrelationships of multiple arts disciplines across cultures and historical periods is the focus of humanities in the arts.

Academic Expectations

2.24 Students have knowledge of major works of art, music, and literature and appreciate creativity and the contributions of the arts and humanities.

2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.

2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

High School Enduring Knowledge – Understandings

Students will understand that

- the arts are powerful tools for understanding human experiences both past and present.
- the arts help us understand others' (often very different) ways of thinking, working and expressing ourselves.
- the arts play a major role in the creation and defining of cultures and building civilizations.

High School Skills and Concepts – Music

Students will

- describe, analyze and evaluate distinguishing characteristics of music representing a variety of world cultures and historical/style periods (European: Renaissance, Baroque, Neo-Classicism/"Classical," Romanticism, Impressionism/Post-Impressionism, Modern and Contemporary; American: Modern and Contemporary)
- listen to, perform and classify music representing a variety of world cultures and historical/style periods
- examine music from various world cultures and explain how music reflects the culture, cultural beliefs or blending of cultures; use examples to illustrate how music has directly influenced society or culture
- examine music from various time periods and explain how the influence of time and place are reflected in the music

High School Skills and Concepts – Dance

Students will

- describe, analyze and evaluate distinguishing characteristics of dance representing a variety of world cultures and historical/style periods (European: Renaissance, Baroque, Modern and Contemporary Romantic; American: Realism, Modern and Contemporary)
- observe, classify and perform dance representing a variety of world cultures and historical/style periods
- examine dance from various world cultures and explain how dance reflects the culture, cultural beliefs or blending of cultures; use examples to illustrate how dance has directly influenced society or culture
- examine dance from various time periods and explain how the influence of time and place are reflected in the dance

Big Idea: Humanity in the Arts – Continued

High School Skills and Concepts – Drama/Theatre
Students will

- describe, analyze and evaluate distinguishing characteristics of dramatic work representing a variety of world cultures (Japanese, American Modern and Contemporary) and historical/style periods (European: Renaissance, Neo-Classicism/"Classical, Romanticism, Realism)
- observe, classify, and perform dramatic works representing a variety of world cultures and historical/style periods
- examine dramatic works from various world cultures and explain how dramatic works reflect the culture, cultural beliefs or blending of cultures; use examples to illustrate how dramatic works have directly influenced society or culture
- examine dramatic works from various time periods and explain how the influence of time and place are reflected in them
- use print and non-print sources to explore, describe and interpret universal themes, characterization, situations in dramas and characteristics of theater from different cultures or time periods

High School Skills and Concepts – Visual Arts
Students will

- describe, analyze and evaluate distinguishing characteristics of visual art representing a variety of world cultures (Middle Eastern, Asian, Modern and Contemporary European and American) and historical/style periods (Renaissance, Baroque, Neo-Classicism, Romanticism, Realism, Impressionism/Post-Impressionism)
- observe, classify and create visual art according to styles and processes used in a variety of world cultures and historical/style periods
- examine visual artworks from various world cultures and explain how artworks reflect the culture, cultural beliefs or blending of cultures; use examples to illustrate how artworks have directly influenced society or culture
- examine visual artworks from various time periods and explain the influence of time and place are reflected in them
- use print and non-print sources to explore, describe and interpret universal themes, characterization and situations in artworks from different cultures or time periods

Big Idea: Purposes for Creating the Arts

The arts have played a major role throughout the history of humans. As the result of the power of the arts to communicate on a basic human level, they continue to serve a variety of purposes in society. The arts are used for artistic expression to portray specific emotions or feelings, to tell stories in a narrative manner, to imitate nature and to persuade others. The arts bring meaning to ceremonies, rituals, celebrations and commemorations. Additionally, they are used for recreation and to support recreational activities. Students experience the arts in a variety of roles through their own creations and performances and through those of others. Through their activities and observations, students learn to create arts and use them for a variety of purposes in society.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

High School Enduring Knowledge – Understandings

Students will understand that

- the arts fulfill a variety of purposes in society (e.g., to present issues and ideas, to entertain, to teach or persuade, to design, plan and beautify).
- the arts have value and significance for daily life. They provide personal fulfillment, whether in career settings, avocational pursuits or leisure.
- the arts provide forms of nonverbal communication that can strengthen the presentation of ideas and emotions.

High School Skills and Concepts – Music

Students will

- compare, interpret and explain purposes for which music is created to fulfill (ceremonial, recreational, artistic expression)
- create new, listen to, choose and perform music to fulfill a variety of specific purposes

High School Skills and Concepts – Dance

Students will

- compare, interpret and explain purposes for which dance is created (ceremonial, recreational, artistic expression)
- create new, observe, choose and perform dance to fulfill a variety of specific purposes

High School Skills and Concepts – Drama/Theatre

Students will

- compare, interpret and explain purposes for which drama/theatre is created (sharing the human experience, passing on tradition and culture, recreational, artistic expression)
- create or write new, observe, choose and perform dramatic works to fulfill a variety of specific purposes

High School Skills and Concepts – Visual Arts

Students will

- compare, interpret and explain purposes for which visual art is created (ceremonial, artistic expression, narrative, functional, persuasive)
- create new, choose and experience artworks created to fulfill a variety of specific purposes

Big Idea: Processes in the Arts

There are three distinctive processes involved in the arts. These processes are creating new works, performing works for expressive purposes and responding to artworks. Each process is critical and relies on others for completion. Artists create works to express ideas, feelings or beliefs. The visual arts capture a moment in time while the performing arts (music, dance, drama/theatre) are performed for a live audience. The audience responds to the artistic expressions emotionally and intellectually based on the meaning of the work. Each process enhances understanding, abilities and appreciation of others. Students involved in these processes over time will gain a great appreciation for the arts, for artists past and present, and for the value of artistic expression.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.

High School Enduring Knowledge – Understandings

Students will understand that

- there are three distinct processes for involvement in the arts; creating new artworks, performing works previously created and responding to artworks and performances.
- full understanding and appreciation of the arts requires some degree of involvement in all three processes.
- openness, respect for work and an understanding of how artists apply elements and principles of design in creating and performing are personal attitudes and skills that enhance enjoyment of the observer.
- existing and emerging technologies can extend the reach of the art form to new audiences.

High School Skills and Concepts – Music

Students will

- be actively involved in creating, notating, improvising and performing music (e.g., similar style answers to musical phrases, variations on given melodies, demonstrating unity/variety, tension/release, and balance) alone and with others
- use knowledge of musical elements to create and perform music in an expressive manner
- sing or perform on instruments, alone or with others, reading basic music notation (with practice)
- use knowledge of the elements of music and music terminology to describe and critique their own performances and the performances of others
- identify and apply criteria for evaluating music (e.g., skill of performers, originality, emotional impact, variety, interest, technical accuracy)
- demonstrate behavior appropriate for observing the particular context and style of music being performed; discuss opinions with peers in a supportive and constructive way
- explore skills and training necessary for a variety of careers related to music

Big Idea: Processes in the Arts – Continued

High School Skills and Concepts – Dance
Students will

- be actively involved (individually and in groups) in creating and performing dance (using the elements of dance: space, time and force) in a variety of choreographic forms (theme and variation, rondo, narrative)
- demonstrate appropriate alignment, strength and flexibility while performing dance movement
- apply knowledge of dance elements and dance terminology to:
  - expressively create and perform dance to communicate thoughts, ideas and/or feelings
  - describe and critique their own performances and the performances of others
- identify and apply criteria for evaluating dance (e.g., skill of performers, originality, emotional impact, variety, interest)
- demonstrate behavior appropriate for observing the particular context and style of dance being performed; discuss opinions with peers in a supportive and constructive way
- explore skills and training necessary for a variety of careers related to dance

High School Skills and Concepts – Drama/Theatre
Students will

- be actively involved in creating, improvising and performing dramatic works alone and with others, using elements of drama (Literary, Technical, Production)
- use knowledge of elements of drama to:
  - create and perform dramatic works in an expressive manner
  - describe and critique their own performances and the performances of others
- use a variety of resources (e.g., research, peers, technology) to:
  - write, refine, and record dialogue, monologues, and action
  - explore jobs/careers (e.g., playwright, director, actor) and skills associated with dramatic arts (theater, dramatic media)
- identify and apply criteria for evaluating dramatic works (e.g., skill of performers, originality, emotional impact, variety, interest, technical requirements: lighting, sound, scenery, costumes, make-up)
- demonstrate behavior appropriate for observing the particular context and style of dramatic works being performed; discuss opinions with peers in a supportive and constructive way
- explore skills and training necessary for a variety of careers related to dramatic arts

High School Skills and Concepts – Visual Arts
Students will

- be actively involved in selecting media, techniques, subject matter and processes for creating artworks for specific purposes, applying the elements of art and principles of design
- use knowledge of the elements and principles of art and art terminology to:
  - create expressive artworks
  - describe and critique their own work creations and the creations of others (e.g., how the communication of ideas relates to media, techniques, or processes used)
- identify and apply criteria for evaluating visual arts (e.g., skill of artist, originality, emotional impact, variety, interest, technical quality)
- demonstrate behavior appropriate for observing the particular context and style of the artwork being viewed; discuss opinions with peers in a supportive and constructive way
- describe personal responses to artwork; explain why there might be different responses to specific works of art (e.g., personal experience, interest, medium used, effectiveness of message)
- explore skills and training necessary for a variety of careers in visual arts

Big Idea: Interrelationships Among the Arts

The arts share commonalities in structures, purposes, creative processes, and their ability to express ideals, feelings and emotions. Studying interrelationships among the arts enables students to get a broad view of the expressiveness of the art forms as a whole, and helps to develop a full appreciation of the arts as a mirror of human kind.

Academic Expectations

1.12 Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.13 Students make sense of ideas and communicate ideas with the visual arts.
1.14 Students make sense of ideas and communicate ideas with music.
1.15 Students make sense of and communicate ideas with movement.
2.22 Students create works of art and make presentations to convey a point of view.
2.25 In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.
2.26 Through the arts and humanities, students recognize that although people are different, they share some common experiences and attitudes.

High School Enduring Knowledge – Understandings

Students will understand that

- the arts are basic forms of human communication.
- music, dance, drama and visual art created in common cultures and/or common historical periods tend to reflect common attitudes, ideas, beliefs and feelings.
- the arts provide forms of non-verbal communication that can strengthen the presentation of ideas and emotions.
- the modes of thinking and methods of the arts disciplines can be used to illuminate situations in other disciplines that require creative solutions.

High School Skills and Concepts – Arts

Students will

- explain common terms and concepts used in various arts (e.g., tempo in dance and music)
- analyze and explain how ideas and emotions expressed in one art form (e.g. theatre) are similar or different to ideas and emotions expressed another art form (e.g. dance)
- interpret and explain communication of common universal themes or ideas across different art forms; compare and explain connections between and among different art forms from the same culture, the same stylistic period or the same time period
- explain commonalities between the arts and other subjects taught in the school (e.g., observation skills in visual arts and science, historical and cultural perspectives in the arts and social studies, shape in visual art and mathematics, dance and a healthy lifestyle, fractions in music notation and mathematics, composing music and writing)
- communicate common meaning through creating and performing in the arts

HIGH SCHOOL ENGLISH LANGUAGE ARTS

Kentucky Core Academic Standards – English/Language Arts – High School

The standards are organized around the follow features:

- **Reading and Literature**: Text complexity and the growth of comprehension
- **Writing and Research**: Text types, grade-level focuses, and research
- **Speaking and Listening:** Flexible communication
- **Language Development:** Conventions and vocabulary

Students Who are College and Career ready in reading, Writing, Speaking, Listening, and Language

The descriptions that follow are not standards themselves but instead offer a portrait of students who meet the standards set out in this document. As students advance through the grades and master the standards in reading, writing, speaking, listening, and language, they are able to exhibit with increasing fullness and regularity these capacities of the literate individual.

They demonstrate independence.

Students can, without significant scaffolding, comprehend and evaluate complex texts across a range of types and disciplines, and they can construct effective arguments and convey intricate or multifaceted information. Likewise, students are able independently to discern a speaker's key points, request clarification, and ask relevant questions. They build on others' ideas, articulate their own ideas, and confirm they have been understood. Without prompting, they demonstrate command of standard English and acquire and use a wide-ranging vocabulary. More broadly, they become self-directed learners, effectively seeking out and using resources to assist them, including teachers, peers, and print and digital reference materials.

They build strong content knowledge.

Students establish a base of knowledge across a wide range of subject matter by engaging with works of quality and substance. They become proficient in new areas through research and study. They read purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. They refine and share their knowledge through writing and speaking.

They respond to the varying demands of audience, task, purpose, and discipline.

Students adapt their communication in relation to audience, task, purpose, and discipline. They set and adjust purpose for reading, writing, speaking, listening, and language use as warranted by the task. They appreciate nuances, such as how the composition of an audience should affect tone when speaking and how the connotations of words affect meaning. They also know that different disciplines call for different types of evidence (e.g., documentary evidence in history, experimental evidence in science).

They comprehend as well as critique.

Students are engaged and open-minded—but discerning—readers and listeners. They work diligently to understand precisely what an author or speaker is saying, but they also question an author's or speaker's assumptions and premises and assess the veracity of claims and the soundness of reasoning.

They value evidence.

Students cite specific evidence when offering an oral or written interpretation of a text. They use relevant evidence when supporting their own points in writing and speaking, making their reasoning clear to the reader or listener, and they constructively evaluate others' use of evidence.

They use technology and digital media strategically and capably.

Students employ technology thoughtfully to enhance their reading, writing, speaking, listening, and language use. They tailor their searches online to acquire useful information efficiently, and they integrate what they learn using technology with what they learn offline. They are familiar with the strengths and limitations of various technological tools and mediums and can select and use those best suited to their communication goals.

They come to understand other perspectives and cultures.

Students appreciate that the twenty-first-century classroom and workplace are settings in which people from often widely divergent cultures and who represent diverse experiences and perspectives must learn and work together. Students actively seek to understand other perspectives and cultures through reading and listening, and they are able to communicate effectively with people of varied backgrounds. They evaluate other points of view critically and constructively. Through reading great classic and contemporary works of literature representative of a variety of periods, cultures, and worldviews, students can vicariously inhabit worlds and have experiences much different than their own.

How to read this document

Overall Document Organization

The Standards comprise three main sections: a comprehensive K–5 section and two content area–specific sections for grades 6–12, one for ELA and one for history/social studies, science, and technical subjects. Three appendices accompany the main document.

Each section is divided into strands. K–5 and 6–12 ELA have Reading, Writing, Speaking and Listening, and Language strands; the 6–12 history/ social studies, science, and technical subjects section focuses on Reading and Writing. Each strand is headed by a strand-specific set of College and Career Readiness Anchor Standards that is identical across all grades and content areas.

Standards for each grade within K–8 and for grades 9–10 and 11–12 follow the CCR anchor standards in each strand. Each grade-specific standard (as these standards are collectively referred to) corresponds to the same-numbered CCR anchor standard. Put another way, each CCR anchor standard has an accompanying grade-specific standard translating the broader CCR statement into grade-appropriate end-of-year expectations.

Individual CCR anchor standards can be identified by their strand, CCR status, and number (R.CCR.6, for example). Individual grade-specific standards can be identified by their strand, grade, and number (or number and letter, where applicable), so that RI.4.3, for example, stands for Reading, Informational Text, grade 4, standard 3 and W.5.1a stands for Writing, grade 5, standard 1a. Strand designations can be found in brackets alongside the full strand title.

Who is responsible for which portion of the Standards

A single K–5 section lists standards for reading, writing, speaking, listening, and language across the curriculum, reflecting the fact that most or all of the instruction students in these grades receive comes from one teacher. Grades 6–12 are covered in two content area–specific sections, the first for the English language arts teacher and the second for teachers of history/social studies, science, and technical subjects. Each section uses the same CCR anchor standards but also includes grade-specific standards tuned to the literacy requirements of the particular discipline(s).

Key features of the Standards

Reading: Text complexity and the growth of comprehension

The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by grade "staircase" of increasing text complexity that rises from beginning reading to the college and career readiness level. Whatever they are reading, students must also show a steadily growing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.

Writing: text types, responding to reading, and research

The Standards acknowledge the fact that whereas some writing skills, such as the ability to plan, revise, edit, and publish, are applicable to many types of writing, other skills are more properly defined in terms of specific writing types: arguments, informative/explanatory texts, and narratives. Standard 9 stresses the importance of the writing-reading connection by requiring students to draw and write about evidence from literary and informational texts. Because of the centrality of writing to most forms of inquiry, research standards are prominently included in this strand, though skills important to research are infused throughout the document.

Speaking and Listening: flexible communication and collaboration

Including but not limited to skills necessary for formal presentations, the Speaking and Listening standards require students to develop a range of broadly useful oral communication and interpersonal skills. Students must learn to work together, express and listen carefully to ideas, integrate information from oral, visual, quantitative, and media sources, evaluate what they hear, use media and visual displays strategically to help achieve communicative purposes, and adapt speech to context and task.

Language: Conventions, effective use, and vocabulary

The Language standards include the essential "rules" of standard written and spoken English, but they also approach language as a matter of craft and informed choice among alternatives. The vocabulary standards focus on understanding words and phrases, their relationships, and their nuances and on acquiring new vocabulary, particularly general academic and domain-specific words and phrases.

Appendices A, B, and C

Appendix A contains supplementary material on reading, writing, speaking and listening, and language as well as a glossary of key terms. Appendix B consists of text exemplars illustrating the complexity, quality, and range of reading appropriate for various grade levels with accompanying sample performance tasks. Appendix C includes annotated samples demonstrating at least adequate performance in student writing at various grade levels.

College and Career Readiness Anchor Standards for Reading

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Key Ideas and Details

1 Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2 Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3 Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Craft and Structure

4 Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5 Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6 Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7 Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.*
8 Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9 Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10 Read and comprehend complex literary and informational texts independently and proficiently.

Note on range and content of student reading

To become college and career ready, students must grapple with works of exceptional craft and thought whose range extends across genres, cultures, and centuries. Such works offer profound insights into the human condition and serve as models for students' own thinking and writing. Along with high-quality contemporary works, these texts should be chosen from among seminal U.S. documents, the classics of American literature, and the timeless dramas of Shakespeare. Through wide and deep reading of literature and literary nonfiction of steadily increasing sophistication, students gain a reservoir of literary and cultural knowledge, references, and images; the ability to evaluate intricate arguments; and the capacity to surmount the challenges posed by complex texts.

* Please see "Research to Build Knowledge" in Writing and "Comprehension and Collaboration" in Speaking and Listening for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

Reading Standards for Literature 6–12

The CCR anchor standards and high school grade-specific standards work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details	
1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
2. Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.	2. Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.
3. Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme.	3. Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).
Craft and Structure	
4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).	4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (Include Shakespeare as well as other authors.)
5. Analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise.	5. Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.
6. Analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature.	6. Analyze a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).
Integration of Knowledge and Ideas	
7. Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's Landscape with the Fall of Icarus).	7. Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text. (Include at least one play by Shakespeare and one play by an American dramatist.)
8. (Not applicable to literature)	8. (Not applicable to literature)
9. Analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare).	9. Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics.
Range of Reading and Level of Text Complexity	
10. By the end of grade 9, read and comprehend literature, including stories, dramas, and poems, in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 9–10 text complexity band independently and proficiently.	10. By the end of grade 11, read and comprehend literature, including stories, dramas, and poems, in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 11–CCR text complexity band independently and proficiently.

Reading Standards for Informational Text 6–12

The CCR anchor standards and high school grade-specific standards work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details	
1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
2. Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.	2. Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.
3. Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.	3. Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.
Craft and Structure	
4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).	4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10).
5. Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).	5. Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.
6. Determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.	6. Determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.
Integration of Knowledge and Ideas	
7. Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.	7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.
8. Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.	8. Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., *The Federalist*, presidential addresses).
9. Analyze seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail"), including how they address related themes and concepts.	9. Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address) for their themes, purposes, and rhetorical features.
Range of Reading and Level of Text Complexity	
10. By the end of grade 9, read and comprehend literary nonfiction in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literary nonfiction at the high end of the grades 9–10 text complexity band independently and proficiently.	10. By the end of grade 11, read and comprehend literary nonfiction in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literary nonfiction at the high end of the grades 11–CCR text complexity band independently and proficiently.

College and Career Readiness Anchor Standards for Writing

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes*

1 Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2 Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3 Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Production and Distribution of Writing

4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6 Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7 Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8 Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

*These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.

Note on range and content of student writing

For students, writing is a key means of asserting and defending claims, showing what they know about a subject, and conveying what they have experienced, imagined, thought, and felt. To be college- and career-ready writers, students must take task, purpose, and audience into careful consideration, choosing words, information, structures, and formats deliberately. They need to know how to combine elements of different kinds of writing—for example, to use narrative strategies within argument and explanation within narrative— to produce complex and nuanced writing. They need to be able to use technology strategically when creating, refining, and collaborating on writing. They have to become adept at gathering information, evaluating sources, and citing material accurately, reporting findings from their research and analysis of sources in a clear and cogent manner. They must have the flexibility, concentration, and fluency to produce high-quality first-draft text under a tight deadline as well as the capacity to revisit and make improvements to a piece of writing over multiple drafts when circumstances encourage or require it.

Writing Standards 6–12

The CCR anchor standards and high school grade-specific standards work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes	
1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns. c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from and supports the argument presented.	1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases. c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from and supports the argument presented.
2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. a. Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. a. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

Writing Standards 6–12

Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes (continued)	
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences. a. Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events. b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters. c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole. d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters. e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.	3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences. a. Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events. b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters. c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution). d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters. e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.
Production and Distribution of Writing	
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 9–10 on page 54.)	5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 11–12 on page 54.)
6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
Research to Build and Present Knowledge	
7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

Writing Standards 6–12

Grades 9–10 students:	Grades 11–12 students:
Research to Build and Present Knowledge (continued)	
9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grades 9–10 Reading standards* to literature (e.g., "Analyze how an author draws on and transforms source material in a specific work [e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare]"). b. Apply *grades 9–10 Reading standards* to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning").	9. Draw evidence form literary or informational texts to support analysis, reflection, and research. a. Apply *grades 11–12 Reading standards* to literature (e.g., "Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics"). b. Apply grades 11–12 Reading standards to literary nonfiction (e.g., "Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning [e.g., in U.S. Supreme Court Case majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., *The Federalist*, presidential addresses]").
Range of Writing	
10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

College and Career Readiness Anchor Standards for Speaking and Listening

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Comprehension and Collaboration

1 Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
2 Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
3 Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

Presentation of Knowledge and Ideas

4 Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.
5 Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
6 Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

Note on range and content of student speaking and listening

To become college and career ready, students must have ample opportunities to take part in a variety of rich, structured conversations—as part of a whole class, in small groups, and with a partner—built around important content in various domains. They must be able to contribute appropriately to these conversations, to make comparisons and contrasts, and to analyze and synthesize a multitude of ideas in accordance with the standards of evidence appropriate to a particular discipline. Whatever their intended major or profession, high school graduates will depend heavily on their ability to listen attentively to others so that they are able to build on others' meritorious ideas while expressing their own clearly and persuasively.

New technologies have broadened and expanded the role that speaking and listening play in acquiring and sharing knowledge and have tightened their link to other forms of communication. The Internet has accelerated the speed at which connections between speaking, listening, reading, and writing can be made, requiring that students be ready to use these modalities nearly simultaneously. Technology itself is changing quickly, creating a new urgency for students to be adaptable in response to change.

Speaking and Listening Standards 6–12

The CCR anchor standards and high school grade-specific standards work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 9–10 students:	Grades 11–12 students:
Comprehension and Collaboration	
1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grades 9–10 topics, texts, and issues*, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.	1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grades 11–12 topics, texts, and issues*, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed. c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
2. Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.	2. Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.	3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.
Presentation of Knowledge and Ideas	
4. Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.	4. Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.	5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grades 9–10 Language standards 1 and 3 on pages 54 for specific expectations.)	6. Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate. (See grades 11–12 Language standards 1 and 3 on page 54 for specific expectations.)

College and Career Readiness Anchor Standards for Language

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Conventions of Standard English

1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

Knowledge of Language

3 Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

Vocabulary acquisition and Use

4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
5 Demonstrate understanding of word relationships and nuances in word meanings.
6 Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Note on range and content of student language use

To be college and career ready in language, students must have firm control over the conventions of standard English. At the same time, they must come to appreciate that language is as at least as much a matter of craft as of rules and be able to choose words, syntax, and punctuation to express themselves and achieve particular functions and rhetorical effects. They must also have extensive vocabularies, built through reading and study, enabling them to comprehend complex texts and engage in purposeful writing about and conversations around content. They need to become skilled in determining or clarifying the meaning of words and phrases they encounter, choosing flexibly from an array of strategies to aid them. They must learn to see an individual word as part of a network of other words—words, for example, that have similar denotations but different connotations. The inclusion of Language standards in their own strand should not be taken as an indication that skills related to conventions, effective language use, and vocabulary are unimportant to reading, writing, speaking, and listening; indeed, they are inseparable from such contexts.

Language Standards 6–12

The CCR anchor standards and high school grade-specific standards work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 9–10 students:	Grades 11–12 students:
Conventions of Standard English	
1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Use parallel structure.* b. Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations.	1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested. b. Resolve issues of complex or contested usage, consulting references (e.g., *Merriam-Webster's Dictionary of English Usage, Garner's Modern American Usage*) as needed.
2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses. b. Use a colon to introduce a list or quotation. c. Spell correctly.	2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Observe hyphenation conventions. b. Spell correctly.
Knowledge of Language	
3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening. a. Write and edit work so that it conforms to the guidelines in a style manual (e.g., *MLA Handbook*, Turabian's *Manual for Writers*) appropriate for the discipline and writing type.	3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening. a. Vary syntax for effect, consulting references (e.g., Tufte's *Artful Sentences*) for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.

Language Standards 6–12

Grades 9–10 students:	Grades 11–12 students:
Vocabulary Acquisition and Use	
4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 9–10 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., *analyze, analysis, analytical; advocate, advocacy*). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 11–12 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., *conceive, conception, conceivable*). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., euphemism, oxymoron) in context and analyze their role in the text. b. Analyze nuances in the meaning of words with similar denotations.	5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., hyperbole, paradox) in context and analyze their role in the text. b. Analyze nuances in the meaning of words with similar denotations.
6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.	6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Language Progressive Skills, by Grade

The following skills, marked with an asterisk (*) in Language standards 1–3, are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking.

Standard	Grade(s)							
	3	4	5	6	7	8	9–10	11–12
L.3.1f. Ensure subject-verb and pronoun-antecedent agreement.								
L.3.3a. Choose words and phrases for effect.								
L.4.1f. Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.								
L.4.1g. Correctly use frequently confused words (e.g., *to/too/two; there/their*).								
L.4.3a. Choose words and phrases to convey ideas precisely.*								
L.4.3b. Choose punctuation for effect.								
L.5.1d. Recognize and correct inappropriate shifts in verb tense.								
L.5.2a. Use punctuation to separate items in a series.†								
L.6.1c. Recognize and correct inappropriate shifts in pronoun number and person.								
L.6.1d. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).								
L.6.1e. Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.								
L.6.2a. Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.								
L.6.3a. Vary sentence patterns for meaning, reader/listener interest, and style.‡								
L.6.3b. Maintain consistency in style and tone.								
L.7.1c. Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.								
L.7.3a. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.								
L.8.1d. Recognize and correct inappropriate shifts in verb voice and mood.								
L.9–10.1a. Use parallel structure.								

* Subsumed by L.7.3a
† Subsumed by L.9–10.1a
‡ Subsumed by L.11–12.3a

Standard 10: Range, Quality, and Complexity of Student Reading 6–12

Measuring Text Complexity: Three Factors

Qualitative evaluation of the text:	Levels of meaning, structure, language conventionality and clarity, and knowledge demands
Quantitative evaluation of the text:	Readability measures and other scores of text complexity
Matching reader to text and task:	Reader variables (such as motivation, knowledge, and experiences) and task variables (such as purpose and the complexity generated by the task assigned and the questions posed)

Note: More detailed information on text complexity and how it is measured is contained in Appendix A.

Range of Text Types for 6–12

Students in grades 6–12 apply the Reading standards to the following range of text types, with texts selected from a broad range of cultures and periods.

	Literature		Informational Text
Stories	drama	Poetry	Literary nonfiction
Includes the subgenres of adventure stories, historical fiction, mysteries, myths, science fiction, realistic fiction, allegories, parodies, satire, and graphic novels	Includes one-act and multi-act plays, both in written form and on film	Includes the subgenres of narrative poems, lyrical poems, free verse poems, sonnets, odes, ballads, and epics	Includes the subgenres of exposition, argument, and functional text in the form of personal essays, speeches, opinion pieces, essays about art or literature, biographies, memoirs, journalism, and historical, scientific, technical, or economic accounts (including digital sources) written for a broad audience

Texts Illustrating the Complexity, Quality, and Range of Student Reading 6–12

	Literature: Stories, Dramas, Poetry	Informational Texts: Literary Nonfiction
6–8	▪ *Little Women* by Louisa May Alcott (1869) ▪ *The Adventures of Tom Sawyer* by Mark Twain (1876) ▪ "The Road Not Taken" by Robert Frost (1915) ▪ *The Dark Is Rising* by Susan Cooper (1973) ▪ *Dragonwings* by Laurence Yep (1975) ▪ *Roll of Thunder, Hear My Cry* by Mildred Taylor (1976)	▪ "Letter on Thomas Jefferson" by John Adams (1776) ▪ *Narrative of the Life of Frederick Douglass, an American Slave* by Frederick Douglass (1845) ▪ "Blood, Toil, Tears and Sweat: Address to Parliament on May 13th, 1940" by Winston Churchill (1940) ▪ *Harriet Tubman: Conductor on the Underground Railroad* by Ann Petry (1955) ▪ *Travels with Charley: In Search of America* by John Steinbeck (1962)
9–10	▪ *The Tragedy of Macbeth* by William Shakespeare (1592) ▪ "Ozymandias" by Percy Bysshe Shelley (1817) ▪ "The Raven" by Edgar Allen Poe (1845) ▪ "The Gift of the Magi" by O. Henry (1906) ▪ *The Grapes of Wrath* by John Steinbeck (1939) ▪ *Fahrenheit 451* by Ray Bradbury (1953) ▪ *The Killer Angels* by Michael Shaara (1975)	▪ "Speech to the Second Virginia Convention" by Patrick Henry (1775) ▪ "Farewell Address" by George Washington (1796) ▪ "Gettysburg Address" by Abraham Lincoln (1863) ▪ "State of the Union Address" by Franklin Delano Roosevelt (1941) ▪ "Letter from Birmingham Jail" by Martin Luther King, Jr. (1964) ▪ "Hope, Despair and Memory" by Elie Wiesel (1997)
11–CCR	▪ "Ode on a Grecian Urn" by John Keats (1820) ▪ *Jane Eyre* by Charlotte Brontë (1848) ▪ "Because I Could Not Stop for Death" by Emily Dickinson (1890) ▪ *The Great Gatsby* by F. Scott Fitzgerald (1925) ▪ *Their Eyes Were Watching God* by Zora Neale Hurston (1937) ▪ *A Raisin in the Sun* by Lorraine Hansberry (1959) ▪ *The Namesake* by Jhumpa Lahiri (2003)	▪ *Common Sense* by Thomas Paine (1776) ▪ *Walden* by Henry David Thoreau (1854) ▪ "Society and Solitude" by Ralph Waldo Emerson (1857) ▪ "The Fallacy of Success" by G. K. Chesterton (1909) ▪ *Black Boy* by Richard Wright (1945) ▪ "Politics and the English Language" by George Orwell (1946) ▪ "Take the Tortillas Out of Your Poetry" by Rudolfo Anaya (1995)

Note: Given space limitations, the illustrative texts listed above are meant only to show individual titles that are representative of a range of topics and genres. (See Appendix B for excerpts of these and other texts illustrative of grades 6–12 text complexity, quality, and range.) At a curricular or instructional level, within and across grade levels, texts need to be selected around topics or themes that generate knowledge and allow students to study those topics or themes in depth.

STANDARDS FOR

Literacy in History/Social Studies, Science, and Technical Subjects

9–12

College and Career Readiness Anchor Standards for Reading

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade span. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Key Ideas and Details

1 Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2 Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3 Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

Craft and Structure

4 Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5 Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6 Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7 Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.*
8 Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9 Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10 Read and comprehend complex literary and informational texts independently and proficiently.

*Please see “Research to Build and Present Knowledge” in Writing for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

Note on range and content of student reading

Reading is critical to building knowledge in history/social studies as well as in science and technical subjects. College and career ready reading in these fields requires an appreciation of the norms and conventions of each discipline, such as the kinds of evidence used in history and science; an understanding of domain-specific words and phrases; an attention to precise details; and the capacity to evaluate intricate arguments, synthesize complex information, and follow detailed descriptions of events and concepts. In history/social studies, for example, students need to be able to analyze, evaluate, and differentiate primary and secondary sources. When reading scientific and technical texts, students need to be able to gain knowledge from challenging texts that often make extensive use of elaborate diagrams and data to convey information and illustrate concepts. Students must be able to read complex informational texts in these fields with independence and confidence because the vast majority of reading in college and workforce training programs will be sophisticated nonfiction. It is important to note that these Reading standards are meant to complement the specific content demands of the disciplines, not replace them.

Reading Standards for Literacy in History/Social Studies 6–12

The standards below begin at grade 6; standards for K–5 reading in history/social studies, science, and technical subjects are integrated into the K–5 Reading standards. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

RH

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of primary and secondary sources.	1. Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.	1. Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.
2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.	2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.	2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.
3. Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).	3. Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.	3. Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.	4. Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.	Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10).
5. Describe how a text presents information (e.g., sequentially, comparatively, causally).	5. Analyze how a text uses structure to emphasize key points or advance an explanation or analysis	5. Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.
6. Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).	6. Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.	6. Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence.
Integration of Knowledge and Ideas		
7. Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.	7. Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.	7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.
8. Distinguish among fact, opinion, and reasoned judgment in a text.	8. Assess the extent to which the reasoning and evidence in a text support the author's claims.	8. Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other information.
9. Analyze the relationship between a primary and secondary source on the same topic.	9. Compare and contrast treatments of the same topic in several primary and secondary sources.	9. Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.
Range of Reading and Level of Text Complexity		
10. By the end of grade 8, read and comprehend history/social studies texts in the grades 6–8 text complexity band independently and proficiently.	10. By the end of grade 10, read and comprehend history/social studies texts in the grades 9–10 text complexity band independently and proficiently.	10. By the end of grade 12, read and comprehend history/social studies texts in the grades 11–12 text complexity band independently and proficiently.

RST

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of science and technical texts.	1. Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.	1. Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.	2. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.	2. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text.	3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
Craft and Structure		
4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics.*	4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 9–10 texts and topics*.	4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 11–12 texts and topics*.
5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.	5. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., *force, friction, reaction force, energy*).	5. Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.	6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
Integration of Knowledge and Ideas		
7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).	7. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.	7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	8. Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.	8. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
9. Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	9. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.	9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
Range of Reading and Level of Text Complexity		
10. By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.	10. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.	10. By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently and proficiently.

College and Career Readiness Anchor Standards for Writing

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade span. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes*

1 Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
2 Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3 Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences.

Production and Distribution of Writing

4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6 Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7 Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8 Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

*These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.

Note on range and content of student writing

For students, writing is a key means of asserting and defending claims, showing what they know about a subject, and conveying what they have experienced, imagined, thought, and felt. To be college and career ready writers, students must take task, purpose, and audience into careful consideration, choosing words, information, structures, and formats deliberately. They need to be able to use technology strategically when creating, refining, and collaborating on writing. They have to become adept at gathering information, evaluating sources, and citing material accurately, reporting findings from their research and analysis of sources in a clear and cogent manner. They must have the flexibility, concentration, and fluency to produce high-quality first-draft text under a tight deadline and the capacity to revisit and make improvements to a piece of writing over multiple drafts when circumstances encourage or require it. To meet these goals, students must devote significant time and effort to writing, producing numerous pieces over short and long time frames throughout the year.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12

The standards below begin at grade 6; standards for K–5 writing in history/social studies, science, and technical subjects are integrated into the K–5 Writing standards. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes		
1. Write arguments focused on *discipline-specific content*. a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from and supports the argument presented.	1. Write arguments focused on *discipline-specific content*. a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.	1. Write arguments focused on *discipline-specific content*. a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases. c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes (continued)		
2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style and objective tone. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.	2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with well chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).
3. (See note; not applicable as a separate requirement)	3. (See note; not applicable as a separate requirement)	3. (See note; not applicable as a separate requirement)

Note: Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history/social studies, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import. In science and technical subjects, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations or technical work that others can replicate them and (possibly) reach the same results.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Production and Distribution of Writing		
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.	5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
Research to Build and Present Knowledge		
7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
9. Draw evidence from informational texts to support analysis reflection, and research.	9. Draw evidence from informational texts to support analysis, reflection, and research.	9. Draw evidence from informational texts to support analysis, reflection, and research.
Range of Writing		
10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

HIGH SCHOOL MATHEMATICS

Kentucky Core Academic Standards – Mathematics – High School

Mathematics Core Academic Standards contain several headings, each one the title of a single progression having significant presence in that particular grade level. Under each of these progression headings, there appear core standards, divided into standards describing concepts student should understand and standards describing skills students should acquire.

Introduction

Toward greater focus and coherence

For over a decade, research studies of mathematics education in high-performing countries have pointed to the conclusion that the mathematics curriculum in the United States must become substantially more focused and coherent in order to improve mathematics achievement in this country. To deliver on the promise of common standards, the standards must address the problem of a curriculum that is "a mile wide and an inch deep." These Standards are a substantial answer to that challenge.

Understanding mathematics

These Standards define what students should understand and be able to do in their study of mathematics. Asking a student to understand something means asking a teacher to assess whether the student has understood it. But what does mathematical understanding look like? One hallmark of mathematical understanding is the ability to justify, in a way appropriate to the student's mathematical maturity, *why* a particular mathematical statement is true or where a mathematical rule comes from. There is a world of difference between a student who can summon a mnemonic device to expand a product such as $(a + b)(x + y)$ and a student who can explain where the mnemonic comes from. The student who can explain the rule understands the mathematics, and may have a better chance to succeed at a less familiar task such as expanding $(a + b + c)(x + y)$. Mathematical understanding and procedural skill are equally important, and both are assessable using mathematical tasks of sufficient richness.

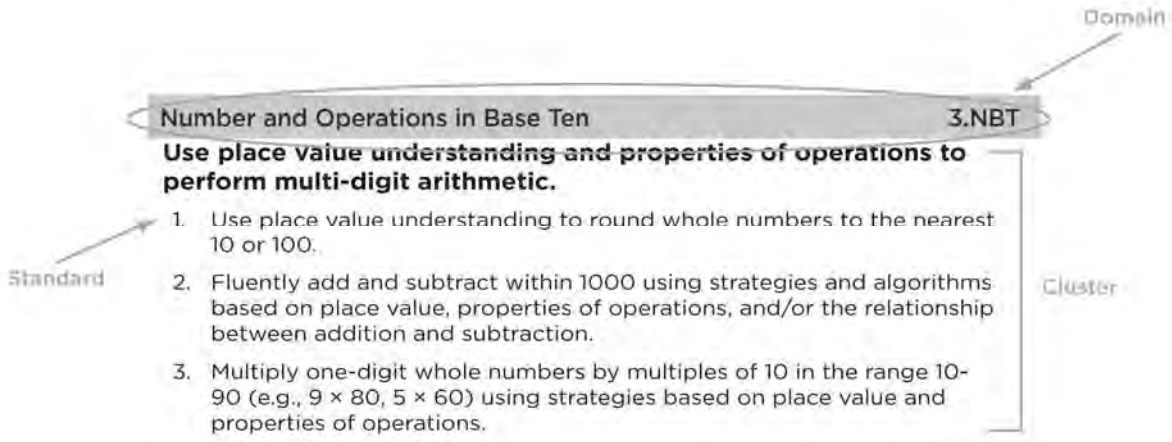
The Standards set grade-specific standards but do not define the intervention methods or materials necessary to support students who are well below or well above grade-level expectations. It is also beyond the scope of the Standards to define the full range of supports appropriate for English language learners and for students with special needs. At the same time, all students must have the opportunity to learn and meet the same high standards if they are to access the knowledge and skills necessary in their post-school lives. The Standards should be read as allowing for the widest possible range of students to participate fully from the outset, along with appropriate accommodations to ensure maximum participation of students with special education needs. For example, for students with disabilities reading should allow for use of Braille, screen reader technology, or other assistive devices, while writing should include the use of a scribe, computer, or speech-to-text technology. In a similar vein, speaking and listening should be interpreted broadly to include sign language. No set of grade-specific standards can fully reflect the great variety in abilities, needs, learning rates, and achievement levels of students in any given classroom. However, the Standards do provide clear signposts along the way to the goal of college and career readiness for all students.

How to read the grade level standards

Standards define what students should understand and be able to do.

Clusters are groups of related standards. Note that standards from different clusters may sometimes be closely related, because mathematics is a connected subject.

Domains are larger groups of related standards. Standards from different domains may sometimes be closely related.



These Standards do not dictate curriculum or teaching methods. For example, just because topic A appears before topic B in the standards for a given grade, it does not necessarily mean that topic A must be taught before topic B. A teacher might prefer to teach topic B before topic A, or might choose to highlight connections by teaching topic A and topic B at the same time. Or, a teacher might prefer to teach a topic of his or her own choosing that leads, as a byproduct, to students reaching the standards for topics A and B.

What students can learn at any particular grade level depends upon what they have learned before. Ideally then, each standard in this document might have been phrased in the form, “Students who already know ... should next come to learn ....” But at present this approach is unrealistic—not least because existing education research cannot specify all such learning pathways. Of necessity therefore, grade placements for specific topics have been made on the basis of state and international comparisons and the collective experience and collective professional judgment of educators, researchers and mathematicians. One promise of common state standards is that over time they will allow research on learning progressions to inform and improve the design of standards to a much greater extent than is possible today. Learning opportunities will continue to vary across schools and school systems, and educators should make every effort to meet the needs of individual students based on their current understanding.

These Standards are not intended to be new names for old ways of doing business. They are a call to take the next step. It is time for states to work together to build on lessons learned from two decades of standards based reforms. It is time to recognize that standards are not just promises to our children, but promises we intend to keep.

Mathematics | Standards for Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).

1. Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2. Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

4. Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6. Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7 × 8 equals the well remembered 7 × 5 + 7 × 3, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2 × 7 and the 9 as 2 + 7. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 – 3(x – y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

8. Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word “understand” are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices.

In this respect, those content standards which set an expectation of understanding are potential “points of intersection” between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.

Mathematics Standards for High School

The high school standards specify the mathematics that all students should study in order to be college and career ready. Additional mathematics that students should learn in order to take advanced courses such as calculus, advanced statistics, or discrete mathematics is indicated by (+), as in this example:

> (+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers).

All standards without a (+) symbol should be in the common mathematics curriculum for all college and career ready students. Standards without a (+) symbol may also appear in courses intended for all students. The high school standards are listed in conceptual categories:

- Number and Quantity
- Algebra
- Functions
- Modeling
- Geometry
- Statistics and Probability

Conceptual categories portray a coherent view of high school mathematics; a student's work with functions, for example, crosses a number of traditional course boundaries, potentially up through and including calculus.

Modeling is best interpreted not as a collection of isolated topics but in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol (□). The star symbol sometimes appears on the heading for a group of standards; in that case, it should be understood to apply to all standards in that group.

Mathematics | High School—Number and Quantity

Numbers and Number Systems. During the years from kindergarten to eighth grade, students must repeatedly extend their conception of number. At first, "number" means "counting number": 1, 2, 3.. Soon after that, 0 is used to represent "none" and the whole numbers are formed by the counting numbers together with zero. The next extension is fractions. At first, fractions are barely numbers and tied strongly to pictorial representations. Yet by the time students understand division of fractions, they have a strong concept of fractions as numbers and have connected them, via their decimal representations, with the base-ten system used to represent the whole numbers. During middle school, fractions are augmented by negative fractions to form the rational numbers. In Grade 8, students extend this system once more, augmenting the rational numbers with the irrational numbers to form the real numbers. In high school, students will be exposed to yet another extension of number, when the real numbers are augmented by the imaginary numbers to form the complex numbers.

With each extension of number, the meanings of addition, subtraction, multiplication, and division are extended. In each new number system—integers, rational numbers, real numbers, and complex numbers—the four operations stay the same in two important ways: They have the commutative, associative, and distributive properties and their new meanings are consistent with their previous meanings.

Extending the properties of whole-number exponents leads to new and productive notation. For example, properties of whole-number exponents suggest that $(5^{1/3})^3$ should be $5^{(1/3)3} = 5^1 = 5$ and that $5^{1/3}$ should be the cube root of 5.

Calculators, spreadsheets, and computer algebra systems can provide ways for students to become better acquainted with these new number systems and their notation. They can be used to generate data for numerical experiments, to help understand the workings of matrix, vector, and complex number algebra, and to experiment with non-integer exponents.

Quantities. In real world problems, the answers are usually not numbers but quantities: numbers with units, which involves measurement. In their work in measurement up through Grade 8, students primarily measure commonly used attributes such as length, area, and volume. In high school, students encounter a wider variety of units in modeling, e.g., acceleration, currency conversions, derived quantities such as person-hours and heating degree days, social science rates such as per-capita income, and rates in everyday life such as points scored per game or batting averages. They also encounter novel situations in which they themselves must conceive the attributes of interest. For example, to find a good measure of overall highway safety, they might propose measures such as fatalities per year, fatalities per year per driver, or fatalities per vehicle-mile traveled. Such a conceptual process is sometimes called quantification. Quantification is important for science, as when surface area suddenly "stands out" as an important variable in evaporation. Quantification is also important for companies, which must conceptualize relevant attributes and create or choose suitable measures for them.

Number and Quantity Overview

The Real Number System

- Extend the properties of exponents to rational exponents
- Use properties of rational and irrational numbers.

Quantities

- Reason quantitatively and use units to solve problems

The Complex Number System

- Perform arithmetic operations with complex numbers
- Represent complex numbers and their operations on the complex plane
- Use complex numbers in polynomial identities and equations

Vector and Matrix Quantities

- Represent and model with vector quantities.
- Perform operations on vectors.
- Perform operations on matrices and use matrices in applications

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Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

The Real Number System N-RN

Extend the properties of exponents to rational exponents.

1 Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define 51/3 to be the cube root of 5 because we want (51/3)3 = 5(1/3)3 to hold, so (51/3)3 must equal 5.

2 Rewrite expressions involving radicals and rational exponents using the properties of exponents.

Use properties of rational and irrational numbers.

3 Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.

Quantities★ N-Q

Reason quantitatively and use units to solve problems.

1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

2 Define appropriate quantities for the purpose of descriptive modeling.

3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

The Complex Number System N-CN

Perform arithmetic operations with complex numbers.

1 Know there is a complex number i such that i2 = –1, and every complex number has the form a + bi with a and b real.

2 Use the relation i2 = –1 and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.

3 (+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.

Represent complex numbers and their operations on the complex plane.

4 (+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.

5 (+) Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. For example, (–1 + √3 i)3 = 8 because (–1 + √3 i) has modulus 2 and argument 120°.

6 (+) Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.

Use complex numbers in polynomial identities and equations.

7 Solve quadratic equations with real coefficients that have complex solutions.

8 (+) Extend polynomial identities to the complex numbers. For example, rewrite x2 + 4 as (x + 2i)(x – 2i).

9 (+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.

Represent and model with vector quantities.

1 (+) Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., v, |v|, ||v||, $\mathbf{v}$).

2 (+) Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.

3 (+) Solve problems involving velocity and other quantities that can be represented by vectors.

Perform operations on vectors.

4 (+) Add and subtract vectors.

a. Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.

b. Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.

c. Understand vector subtraction $v - w$ as $v + (-w)$, where $-w$ is the additive inverse of w, with the same magnitude as w and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.

5 (+) Multiply a vector by a scalar.

a. Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$.

b. Compute the magnitude of a scalar multiple $c\mathbf{v}$ using $||c\mathbf{v}|| = |c|v$. Compute the direction of $c\mathbf{v}$ knowing that when $|c|v \neq 0$, the direction of $c\mathbf{v}$ is either along $\mathbf{v}$ (for $c > 0$) or against $\mathbf{v}$ (for $c < 0$).

Perform operations on matrices and use matrices in applications.

6 (+) Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.

7 (+) Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.

8 (+) Add, subtract, and multiply matrices of appropriate dimensions.

9 (+) Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.

10 (+) Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.

11 (+) Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.

12 (+) Work with 2 × 2 matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area.

Mathematics | High School—Algebra

Expressions. An expression is a record of a computation with numbers, symbols that represent numbers, arithmetic operations, exponentiation, and, at more advanced levels, the operation of evaluating a function. Conventions about the use of parentheses and the order of operations assure that each expression is unambiguous. Creating an expression that describes a computation involving a general quantity requires the ability to express the computation in general terms, abstracting from specific instances.

Reading an expression with comprehension involves analysis of its underlying structure. This may suggest a different but equivalent way of writing the expression that exhibits some different aspect of its meaning. For example, $p + 0.05p$ can be interpreted as the addition of a 5% tax to a price p. Rewriting $p + 0.05p$ as $1.05p$ shows that adding a tax is the same as multiplying the price by a constant factor.

Algebraic manipulations are governed by the properties of operations and exponents, and the conventions of algebraic notation. At times, an expression is the result of applying operations to simpler expressions. For example, $p + 0.05p$ is the sum of the simpler expressions p and $0.05p$. Viewing an expression as the result of operation on simpler expressions can sometimes clarify its underlying structure.

A spreadsheet or a computer algebra system (CAS) can be used to experiment with algebraic expressions, perform complicated algebraic manipulations, and understand how algebraic manipulations behave.

Equations and inequalities. An equation is a statement of equality between two expressions, often viewed as a question asking for which values of the variables the expressions on either side are in fact equal. These values are the solutions to the equation. An identity, in contrast, is true for all values of the variables; identities are often developed by rewriting an expression in an equivalent form.

The solutions of an equation in one variable form a set of numbers; the solutions of an equation in two variables form a set of ordered pairs of numbers, which can be plotted in the coordinate plane. Two or more equations and/or inequalities form a system. A solution for such a system must satisfy every equation and inequality in the system.

An equation can often be solved by successively deducing from it one or more simpler equations. For example, one can add the same constant to both sides without changing the solutions, but squaring both sides might lead to extraneous solutions. Strategic competence in solving includes looking ahead for productive manipulations and anticipating the nature and number of solutions.

Some equations have no solutions in a given number system, but have a solution in a larger system. For example, the solution of $x + 1 = 0$ is an integer, not a whole number; the solution of $2x + 1 = 0$ is a rational number, not an integer; the solutions of $x2 – 2 = 0$ are real numbers, not rational numbers; and the solutions of $x2 + 2 = 0$ are complex numbers, not real numbers.

The same solution techniques used to solve equations can be used to rearrange formulas. For example, the formula for the area of a trapezoid, $A = ((b1+b2)/2)h$, can be solved for h using the same deductive process.

Inequalities can be solved by reasoning about the properties of inequality. Many, but not all, of the properties of equality continue to hold for inequalities and can be useful in solving them.

Connections to Functions and Modeling. Expressions can define functions, and equivalent expressions define the same function. Asking when two functions have the same value for the same input leads to an equation; graphing the two functions allows for finding approximate solutions of the equation. Converting a verbal description to an equation, inequality, or system of these is an essential skill in modeling.

Algebra Overview

Seeing Structure in Expressions

- Interpret the structure of expressions
- Write expressions in equivalent forms to solve problems

Arithmetic with Polynomials and Rational Expressions

- Perform arithmetic operations on polynomials
- Understand the relationship between zeros and factors of polynomials
- Use polynomial identities to solve problems
- Rewrite rational expressions

Creating Equations

- Create equations that describe numbers or relationships

Reasoning with Equations and Inequalities

- Understand solving equations as a process of reasoning and explain the reasoning
- Solve equations and inequalities in one variable
- Solve systems of equations
- Represent and solve equations and inequalities graphically

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning

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Seeing Structure in Expressions A-SSE

Interpret the structure of expressions

1 Interpret expressions that represent a quantity in terms of its context.★

   a. Interpret parts of an expression, such as terms, factors, and coefficients.

   b. Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret P(1+r)n as the product of P and a factor not depending on P.

2 Use the structure of an expression to identify ways to rewrite it. For example, see x4 – y4 as (x2)2 – (y2)2, thus recognizing it as a difference of squares that can be factored as (x2 – y2)(x2 + y2).

Write expressions in equivalent forms to solve problems

3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.★

   a. Factor a quadratic expression to reveal the zeros of the function it defines.

   b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

   c. Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15t can be rewritten as (1.151/12)12t ≈ 1.01212t to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.

4 Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. For example, calculate mortgage payments.★

Arithmetic with Polynomials and Rational Expressions A-APR

Perform arithmetic operations on polynomials

1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

Understand the relationship between zeros and factors of polynomials

2 Know and apply the Remainder Theorem: For a polynomial p(x) and a number a, the remainder on division by x – a is p(a), so p(a) = 0 if and only if (x – a) is a factor of p(x).

3 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

Use polynomial identities to solve problems

4 Prove polynomial identities and use them to describe numerical relationships. For example, the polynomial identity (x2 + y2)2 = (x2 – y2)2 + (2xy)2can be used to generate Pythagorean triples.

5 (+) Know and apply the Binomial Theorem for the expansion of (x + y)n in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle.[1]

Rewrite rational expressions

6 Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system.

[1] The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.

7 (+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.

Creating Equations★ A-CED

Create equations that describe numbers or relationships

1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.

2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.

4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.

Reasoning with Equations and Inequalities A-REI

Understand solving equations as a process of reasoning and explain the reasoning

1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

Solve equations and inequalities in one variable

3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

4 Solve quadratic equations in one variable.

a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x – p)2 = q$ that has the same solutions. Derive the quadratic formula from this form.

b. Solve quadratic equations by inspection (e.g., for $x2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a ± bi$ for real numbers a and b.

Solve systems of equations

5 Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.

6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

7 Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line $y = –3x$ and the circle $x2 + y2 = 3$.

8 (+) Represent a system of linear equations as a single matrix equation in a vector variable.

9 (+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater).

Represent and solve equations and inequalities graphically

10 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).

11 Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.★

12 Graph the solutions to a linear inequality in two variables as a halfplane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

Mathematics | High School—Functions

Functions describe situations where one quantity determines another. For example, the return on $10,000 invested at an annualized percentage rate of 4.25% is a function of the length of time the money is invested. Because we continually make theories about dependencies between quantities in nature and society, functions are important tools in the construction of mathematical models. In school mathematics, functions usually have numerical inputs and outputs and are often defined by an algebraic expression. For example, the time in hours it takes for a car to drive 100 miles is a function of the car's speed in miles per hour, v; the rule T(v) = 100/v expresses this relationship algebraically and defines a function whose name is T. The set of inputs to a function is called its domain. We often infer the domain to be all inputs for which the expression defining a function has a value, or for which the function makes sense in a given context.

A function can be described in various ways, such as by a graph (e.g., the trace of a seismograph); by a verbal rule, as in, "I'll give you a state, you give me the capital city;" by an algebraic expression like f(x) = a + bx; or by a recursive rule. The graph of a function is often a useful way of visualizing the relationship of the function models, and manipulating a mathematical expression for a function can throw light on the function's properties.

Functions presented as expressions can model many important phenomena. Two important families of functions characterized by laws of growth are linear functions, which grow at a constant rate, and exponential functions, which grow at a constant percent rate. Linear functions with a constant term of zero describe proportional relationships.

A graphing utility or a computer algebra system can be used to experiment with properties of these functions and their graphs and to build computational models of functions, including recursively defined functions.

Connections to Expressions, Equations, Modeling, and Coordinates.

Determining an output value for a particular input involves evaluating an expression; finding inputs that yield a given output involves solving an equation. Questions about when two functions have the same value for the same input lead to equations, whose solutions can be visualized from the intersection of their graphs. Because functions describe relationships between quantities, they are frequently used in modeling. Sometimes functions are defined by a recursive process, which can be displayed effectively using a spreadsheet or other technology.

Functions Overview

Interpreting Functions

- Understand the concept of a function and use function notation
- Interpret functions that arise in applications in terms of the context
- analyze functions using different representations

Building Functions

- Build a function that models a relationship between two quantities
- Build new functions from existing functions

Linear, Quadratic, and Exponential Models

- Construct and compare linear, quadratic, and exponential models and solve problems
- Interpret expressions for functions in terms of the situation they model

Trigonometric Functions

- extend the domain of trigonometric functions using the unit circle
- model periodic phenomena with trigonometric functions
- Prove and apply trigonometric identities

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Interpreting Functions F-IF

Understand the concept of a function and use function notation

1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).
2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1) for n ≥ 1.

Interpret functions that arise in applications in terms of the context

4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.★
5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.★
6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.★

Analyze functions using different representations

7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.★
    a. Graph linear and quadratic functions and show intercepts, maxima, and minima.
    b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
    c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.
    d. (+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.
    e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.
    a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.
    b. Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as y = (1.02)t, y = (0.97)t, y = (1.01)12t, y = (1.2)t/10, and classify them as representing exponential growth or decay.

9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.

Building Functions F-BF

Build a function that models a relationship between two quantities

1 Write a function that describes a relationship between two quantities.★

   a. Determine an explicit expression, a recursive process, or steps for calculation from a context.

   b. Combine standard function types using arithmetic operations. For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.

   c. (+) Compose functions. For example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time.

2 Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.★

Build new functions from existing functions

3 Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.

4 Find inverse functions.

   a. Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse. For example, f(x) =2 x3 or f(x) = (x+1)/(x–1) for $x \neq 1$.

   b. (+) Verify by composition that one function is the inverse of another.

   c. (+) Read values of an inverse function from a graph or a table, given that the function has an inverse.

   d. (+) Produce an invertible function from a non-invertible function by restricting the domain.

5 (+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.

Linear, Quadratic, and Exponential Models★ F-LE

Construct and compare linear, quadratic, and exponential models and solve problems

1 Distinguish between situations that can be modeled with linear functions and with exponential functions.

   a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.

   b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.

   c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.

2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.

4 For exponential models, express as a logarithm the solution to abct = d where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.

Interpret expressions for functions in terms of the situation they model

5 Interpret the parameters in a linear or exponential function in terms of a context.

Trigonometric Functions F-TF

Extend the domain of trigonometric functions using the unit circle

1 Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.

2 Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.

3 (+) Use special triangles to determine geometrically the values of sine, cosine, tangent for π/3, π/4 and π/6, and use the unit circle to express the values of sine, cosine, and tangent for π–x, π+x, and 2π–x in terms of their values for x, where x is any real number.

4 (+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.

Model periodic phenomena with trigonometric functions

5 Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.★

6 (+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.

7 (+) Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.★

Prove and apply trigonometric identities

8 Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to calculate trigonometric ratios.

9 (+) Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.

Mathematics | High School—Modeling

Modeling links classroom mathematics and statistics to everyday life, work, and decision-making. Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions. Quantities and their relationships in physical, economic, public policy, social, and everyday situations can be modeled using mathematical and statistical methods. When making mathematical models, technology is valuable for varying assumptions, exploring consequences, and comparing predictions with data.

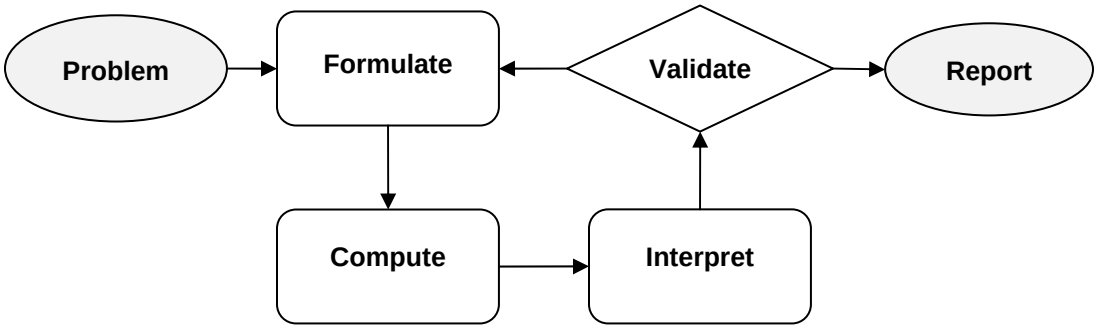
A model can be very simple, such as writing total cost as a product of unit price and number bought, or using a geometric shape to describe a physical object like a coin. Even such simple models involve making choices. It is up to us whether to model a coin as a three-dimensional cylinder, or whether a two-dimensional disk works well enough for our purposes. Other situations—modeling a delivery route, a production schedule, or a comparison of loan amortizations—need more elaborate models that use other tools from the mathematical sciences. Real-world situations are not organized and labeled for analysis; formulating tractable models, representing such models, and analyzing them is appropriately a creative process. Like every such process, this depends on acquired expertise as well as creativity.

Some examples of such situations might include:

- Estimating how much water and food is needed for emergency relief in a devastated city of 3 million people, and how it might be distributed. Planning a table tennis tournament for 7 players at a club with 4 tables, where each player plays against each other player.
- Designing the layout of the stalls in a school fair so as to raise as much money as possible.
- Analyzing stopping distance for a car. Modeling savings account balance, bacterial colony growth, or investment growth.
- Engaging in critical path analysis, e.g., applied to turnaround of an aircraft at an airport.
- Analyzing risk in situations such as extreme sports, pandemics, and terrorism.
- Relating population statistics to individual predictions.

In situations like these, the models devised depend on a number of factors: How precise an answer do we want or need? What aspects of the situation do we most need to understand, control, or optimize? What resources of time and tools do we have? The range of models that we can create and analyze is also constrained by the limitations of our mathematical, statistical, and technical skills, and our ability to recognize significant variables and relationships among them. Diagrams of various kinds, spreadsheets and other technology, and algebra are powerful tools for understanding and solving problems drawn from different types of real-world situations.

One of the insights provided by mathematical modeling is that essentially the same mathematical or statistical structure can sometimes model seemingly different situations. Models can also shed light on the mathematical structures themselves, for example, as when a model of bacterial growth makes more vivid the explosive growth of the exponential function.



The basic modeling cycle is summarized in the diagram. It involves (1) identifying variables in the situation and selecting those that represent essential features, (2) formulating a model by creating and selecting geometric, graphical, tabular, algebraic, or statistical representations that describe relationships between the variables, (3) analyzing and performing operations on these relationships to draw conclusions, (4) interpreting the results of the mathematics in terms of the original situation, (5) validating the conclusions by comparing them with the situation, and then either improving the model or, if it is acceptable, (6) reporting on the conclusions and the reasoning behind them. Choices, assumptions, and approximations are present throughout this cycle.

In descriptive modeling, a model simply describes the phenomena or summarizes them in a compact form. Graphs of observations are a familiar descriptive model—for example, graphs of global temperature and atmospheric CO^2 over time. Analytic modeling seeks to explain data on the basis of deeper theoretical ideas, albeit with parameters that are empirically based; for example, exponential growth of bacterial colonies (until cut-off mechanisms such as pollution or starvation intervene) follows from a constant reproduction rate. Functions are an important tool for analyzing such problems. Graphing utilities, spreadsheets, computer algebra systems, and dynamic geometry software are powerful tools that can be used to model purely mathematical phenomena (e.g., the behavior of polynomials) as well as physical phenomena.

Modeling Standards *Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol* ★.

Mathematics | High School—Geometry

An understanding of the attributes and relationships of geometric objects can be applied in diverse contexts—interpreting a schematic drawing, estimating the amount of wood needed to frame a sloping roof, rendering computer graphics, or designing a sewing pattern for the most efficient use of material. Although there are many types of geometry, school mathematics is devoted primarily to plane Euclidean geometry, studied both synthetically (without coordinates) and analytically (with coordinates). Euclidean geometry is characterized most importantly by the Parallel Postulate, that through a point not on a given line there is exactly one parallel line. (Spherical geometry, in contrast, has no parallel lines.)

During high school, students begin to formalize their geometry experiences from elementary and middle school, using more precise definitions and developing careful proofs. Later in college some students develop Euclidean and other geometries carefully from a small set of axioms.

The concepts of congruence, similarity, and symmetry can be understood from the perspective of geometric transformation. Fundamental are the rigid motions: translations, rotations, reflections, and combinations of these, all of which are here assumed to preserve distance and angles (and therefore shapes generally). Reflections and rotations each explain a particular type of symmetry, and the symmetries of an object offer insight into its attributes—as when the reflective symmetry of an isosceles triangle assures that its base angles are congruent. In the approach taken here, two geometric figures are defined to be congruent if there is a sequence of rigid motions that carries one onto the other. This is the principle of superposition. For triangles, congruence means the equality of all corresponding pairs of sides and all corresponding pairs of angles. During the middle grades, through experiences drawing triangles from given conditions, students notice ways to specify enough measures in a triangle to ensure that all triangles drawn with those measures are congruent. Once these triangle congruence criteria (ASA, SAS, and SSS) are established using rigid motions, they can be used to prove theorems about triangles, quadrilaterals, and other geometric figures. Similarity transformations (rigid motions followed by dilations) define similarity in the same way that rigid motions define congruence, thereby formalizing the similarity ideas of "same shape" and "scale factor" developed in the middle grades. These transformations lead to the criterion for triangle similarity that two pairs of corresponding angles are congruent.

The definitions of sine, cosine, and tangent for acute angles are founded on right triangles and similarity, and, with the Pythagorean Theorem, are fundamental in many real-world and theoretical situations. The Pythagorean Theorem is generalized to nonright triangles by the Law of Cosines. Together, the Laws of Sines and Cosines embody the triangle congruence criteria for the cases where three pieces of information suffice to completely solve a triangle. Furthermore, these laws yield two possible solutions in the ambiguous case, illustrating that Side-Side-Angle is not a congruence criterion. Analytic geometry connects algebra and geometry, resulting in powerful methods of analysis and problem solving. Just as the number line associates numbers with locations in one dimension, a pair of perpendicular axes associates pairs of numbers with locations in two dimensions. This correspondence between numerical coordinates and geometric points allows methods from algebra to be applied to geometry and vice versa. The solution set of an equation becomes a geometric curve, making visualization a tool for doing and understanding algebra. Geometric shapes can be described by equations, making algebraic manipulation into a tool for geometric understanding, modeling, and proof. Geometric transformations of the graphs of equations correspond to algebraic changes in their equations.

Dynamic geometry environments provide students with experimental and modeling tools that allow them to investigate geometric phenomena in much the same way as computer algebra systems allow them to experiment with algebraic phenomena.

Connections to Equations. The correspondence between numerical coordinates and geometric points allows methods from algebra to be applied to geometry and vice versa. The solution set of an equation becomes a geometric curve, making visualization a tool for doing and understanding algebra. Geometric shapes can be described by equations, making algebraic manipulation into a tool for geometric understanding, modeling, and proof.

Geometry Overview

Congruence

- Experiment with transformations in the plane
- Understand congruence in terms of rigid motions
- Prove geometric theorems
- Make geometric constructions

Similarity, Right Triangles, and Trigonometry

- Understand similarity in terms of similarity transformations
- Prove theorems involving similarity
- Define trigonometric ratios and solve problems involving right triangles
- Apply trigonometry to general triangles

Circles

- Understand and apply theorems about circles
- Find arc lengths and areas of sectors of circles

Expressing Geometric Properties with Equations

- Translate between the geometric description and the algebraically

Geometric Measurement and Dimension

- Explain volume formulas and use them to solve problems
- Visualize relationships between two-dimensional and three-dimensional objects

Modeling with Geometry

- Apply geometric concepts in modeling situations

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning

Congruence G-CO

Experiment with transformations in the plane

1 Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

2 Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).

3 Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.

4 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

5 Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.

Understand congruence in terms of rigid motions

6 Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.

7 Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.

8 Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.

Prove geometric theorems

9 Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.

10 Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.

11 Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.

Make geometric constructions

12 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.

13 Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.

Similarity, Right Triangles, and Trigonometry G-SRT

Understand similarity in terms of similarity transformations

1. Verify experimentally the properties of dilations given by a center and a scale factor:
    a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.
    b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.
2. Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.
3. Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.

Prove theorems involving similarity

4. Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.
5. Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Define trigonometric ratios and solve problems involving right triangles

6. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.
7. Explain and use the relationship between the sine and cosine of complementary angles.
8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.★

Apply trigonometry to general triangles

9. (+) Derive the formula A = 1/2 ab sin(C) for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.
10. (+) Prove the Laws of Sines and Cosines and use them to solve problems.
11. (+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).

Circles G-C

Understand and apply theorems about circles

1. Prove that all circles are similar.
2. Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.
3. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.
4. (+) Construct a tangent line from a point outside a given circle to the circle.

Find arc lengths and areas of sectors of circles

5 Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

Expressing Geometric Properties with Equations G-GPE

Translate between the geometric description and the equation for a conic section

1 Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.

2 Derive the equation of a parabola given a focus and directrix.

3 (+) Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.

Use coordinates to prove simple geometric theorems algebraically

4 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, $\sqrt{3}$) lies on the circle centered at the origin and containing the point (0, 2).

5 Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

6 Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

7 Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.★

Geometric Measurement and Dimension G-GMD

Explain volume formulas and use them to solve problems

1 Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.

2 (+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.

3 Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.★

Visualize relationships between two-dimensional and three-dimensional objects

4 Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.

Modeling with Geometry G-MG

Apply geometric concepts in modeling situations

5 Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).★

6 Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).★

7 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).★

Mathematics | High School—Statistics and Probability★

Decisions or predictions are often based on data—numbers in context. These decisions or predictions would be easy if the data always sent a clear message, but the message is often obscured by variability. Statistics provides tools for describing variability in data and for making informed decisions that take it into account.

Data are gathered, displayed, summarized, examined, and interpreted to discover patterns and deviations from patterns. Quantitative data can be described in terms of key characteristics: measures of shape, center, and spread. The shape of a data distribution might be described as symmetric, skewed, flat, or bell shaped, and it might be summarized by a statistic measuring center (such as mean or median) and a statistic measuring spread (such as standard deviation or interquartile range). Different distributions can be compared numerically using these statistics or compared visually using plots. Knowledge of center and spread are not enough to describe a distribution. Which statistics to compare, which plots to use, and what the results of a comparison might mean, depend on the question to be investigated and the real-life actions to be taken.

Randomization has two important uses in drawing statistical conclusions. First, collecting data from a random sample of a population makes it possible to draw valid conclusions about the whole population, taking variability into account. Second, randomly assigning individuals to different treatments allows a fair comparison of the effectiveness of those treatments. A statistically significant outcome is one that is unlikely to be due to chance alone, and this can be evaluated only under the condition of randomness. The conditions under which data are collected are important in drawing conclusions from the data; in critically reviewing uses of statistics in public media and other reports, it is important to consider the study design, how the data were gathered, and the analyses employed as well as the data summaries and the conclusions drawn.

Random processes can be described mathematically by using a probability model: a list or description of the possible outcomes (the sample space), each of which is assigned a probability. In situations such as flipping a coin, rolling a number cube, or drawing a card, it might be reasonable to assume various outcomes are equally likely. In a probability model, sample points represent outcomes and combine to make up events; probabilities of events can be computed by applying the Addition and Multiplication Rules. Interpreting these probabilities relies on an understanding of independence and conditional probability, which can be approached through the analysis of two-way tables.

Technology plays an important role in statistics and probability by making it possible to generate plots, regression functions, and correlation coefficients, and to simulate many possible outcomes in a short amount of time.

Connections to Functions and Modeling. Functions may be used to describe data; if the data suggest a linear relationship, the relationship can be modeled with a regression line, and its strength and direction can be expressed through a correlation coefficient.

Statistics and Probability Overview

Interpreting Categorical and Quantitative Data

- Summarize, represent, and interpret data on a single count or measurement variable
- Summarize, represent, and interpret data on two categorical and quantitative variables
- Interpret linear models

Making Inferences and Justifying Conclusions

- Understand and evaluate random processes underlying statistical experiments
- make inferences and justify conclusions from sample surveys, experiments and observational studies

Conditional Probability and the Rules of Probability

- Understand independence and conditional probability and use them to interpret data
- Use the rules of probability to compute probabilities of compound events in a uniform probability model

Using Probability to Make Decisions

- Calculate expected values and use them to solve problems
- Use probability to evaluate outcomes of decisions

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning

Interpreting Categorical and Quantitative Data S-ID

Summarize, represent, and interpret data on a single count or measurement variable

1 Represent data with plots on the real number line (dot plots, histograms, and box plots).

2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).

4 Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

Summarize, represent, and interpret data on two categorical and quantitative variables

5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.

6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

- a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.
- b. Informally assess the fit of a function by plotting and analyzing residuals.
- c. Fit a linear function for a scatter plot that suggests a linear association.

Interpret linear models

7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

8 Compute (using technology) and interpret the correlation coefficient of a linear fit.

9 Distinguish between correlation and causation.

Making Inferences and Justifying Conclusions S-IC

Understand and evaluate random processes underlying statistical experiments

1 Understand statistics as a process for making inferences about population parameters based on a random sample from that population.

2 Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. For example, a model says a spinning coin falls heads up with probability 0.5. Would *a result of 5 tails in a row cause you to question the model?*

Make inferences and justify conclusions from sample surveys, experiments, and observational studies

3 Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.

4 Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.

5 Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.

6 Evaluate reports based on data.

Conditional Probability and the Rules of Probability S-CP

Understand independence and conditional probability and use them to interpret data

1. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").
2. Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.
3. Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.
4. Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.
5. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.

Use the rules of probability to compute probabilities of compound events in a uniform probability model

6. Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.
7. Apply the Addition Rule, P(A or B) = P(A) + P(B) – P(A and B), and interpret the answer in terms of the model.
8. (+) Apply the general Multiplication Rule in a uniform probability model, P(A and B) = P(A)P(B|A) = P(B)P(A|B), and interpret the answer in terms of the model.
9. (+) Use permutations and combinations to compute probabilities of compound events and solve problems.

Using Probability to Make Decisions S-MD

Calculate expected values and use them to solve problems

1. (+) Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.
2. (+) Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.
3. (+) Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.

4 (+) Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?

Use probability to evaluate outcomes of decisions

5 (+) Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.

a. Find the expected payoff for a game of chance. For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.

b. Evaluate and compare strategies on the basis of expected values. For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.

6 (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).

7 (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

Note on Courses and Transitions

The high school portion of the Standards for Mathematical Content specifies the mathematics all students should study for college and career readiness. These standards do not mandate the sequence of high school courses. However, the organization of high school courses is a critical component to implementation of the standards. To that end, sample high school pathways for mathematics – in both a traditional course sequence (Algebra I, Geometry, and Algebra II) as well as an integrated course sequence (Mathematics 1, Mathematics 2, Mathematics 3) – will be made available shortly after the release of the final Common Core State Standards. It is expected that additional model pathways based on these standards will become available as well.

The standards themselves do not dictate curriculum, pedagogy, or delivery of content. In particular, states may handle the transition to high school in different ways. For example, many students in the U.S. today take Algebra I in the 8th grade, and in some states this is a requirement. The K-7 standards contain the prerequisites to prepare students for Algebra I by 8th grade, and the standards are designed to permit states to continue existing policies concerning Algebra I in 8th grade.

A second major transition is the transition from high school to post-secondary education for college and careers. The evidence concerning college and career readiness shows clearly that the knowledge, skills, and practices important for readiness include a great deal of mathematics prior to the boundary defined by (+) symbols in these standards. Indeed, some of the highest priority content for college and career readiness comes from Grades 6-8. This body of material includes powerfully useful proficiencies such as applying ratio reasoning in real-world and mathematical problems, computing fluently with positive and negative fractions and decimals, and solving real-world and mathematical problems involving angle measure, area, surface area, and volume. Because important standards for college and career readiness are distributed across grades and courses, systems for evaluating college and career readiness should reach as far back in the standards as Grades 6-8. It is important to note as well that cut scores or other information generated by assessment systems for college and career readiness should be developed in collaboration with representatives from higher education and workforce development programs, and should be validated by subsequent performance of students in college and the workforce.

Glossary

Addition and subtraction within 5, 10, 20, 100, or 1000. Addition or subtraction of two whole numbers with whole number answers, and with sum or minuend in the range 0-5, 0-10, 0-20, or 0-100, respectively. Example: 8 + 2 = 10 is an addition within 10, 14 – 5 = 9 is a subtraction within 20, and 55 – 18 = 37 is a subtraction within 100.

Additive inverses. Two numbers whose sum is 0 are additive inverses of one another. Example: 3/4 and – 3/4 are additive inverses of one another because 3/4 + (– 3/4) = (– 3/4) + 3/4 = 0.

Associative property of addition. See Table 3 in this Glossary.

Associative property of multiplication. See Table 3 in this Glossary.

Bivariate data. Pairs of linked numerical observations. Example: a list of heights and weights for each player on a football team.

Box plot. A method of visually displaying a distribution of data values by using the median, quartiles, and extremes of the data set. A box shows the middle 50% of the data.[29]

Commutative property. See Table 3 in this Glossary.

Complex fraction. A fraction A/B where A and/or B are fractions (B nonzero).

Computation algorithm. A set of predefined steps applicable to a class of problems that gives the correct result in every case when the steps are carried out correctly. *See also:* computation strategy.

Computation strategy. Purposeful manipulations that may be chosen for specific problems, may not have a fixed order, and may be aimed at converting one problem into another. *See also:* computation algorithm.

Congruent. Two plane or solid figures are congruent if one can be obtained from the other by rigid motion (a sequence of rotations, reflections, and translations).

Counting on. A strategy for finding the number of objects in a group without having to count every member of the group. For example, if a stack of books is known to have 8 books and 3 more books are added to the top, it is not necessary to count the stack all over again. One can find the total by *counting on*—pointing to the top book and saying "eight," following this with "nine, ten, eleven. There are eleven books now."

Dot plot. *See:* line plot.

Dilation. A transformation that moves each point along the ray through the point emanating from a fixed center, and multiplies distances from the center by a common scale factor.

Expanded form. A multi-digit number is expressed in expanded form when it is written as a sum of single-digit multiples of powers of ten. For example, 643 = 600 + 40 + 3.

Expected value. For a random variable, the weighted average of its possible values, with weights given by their respective probabilities.

First quartile. For a data set with median M, the first quartile is the median of the data values less than M. Example: For the data set {1, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the first quartile is 6.[30] *See also:* median, third quartile, interquartile range.

Fraction. A number expressible in the form a/b where a is a whole number and b is a positive whole number. (The word *fraction* in these standards always refers to a non-negative number.) *See also:* rational number.

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[29] Adapted from Wisconsin Department of Public Instruction, http://dpi.wi.gov/standards/mathglos.html, accessed March 2, 2010.

[30] [2]Many different methods for computing quartiles are in use. The method defined here is sometimes called the Moore and McCabe method. See Langford, E., "Quartiles in Elementary Statistics," *Journal of Statistics Education* Volume 14, Number 3 (2006).

Identity property of 0. See Table 3 in this Glossary.

Independently combined probability models. Two probability models are said to be combined independently if the probability of each ordered pair in the combined model equals the product of the original probabilities of the two individual outcomes in the ordered pair.

Integer. A number expressible in the form *a* or –*a* for some whole number *a*.

Interquartile Range. A measure of variation in a set of numerical data, the interquartile range is the distance between the first and third quartiles of the data set. Example: For the data set {1, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the interquartile range is 15 – 6 = 9. *See also:* first quartile, third quartile.

Line plot. A method of visually displaying a distribution of data values where each data value is shown as a dot or mark above a number line. Also known as a dot plot.[31]

Mean. A measure of center in a set of numerical data, computed by adding the values in a list and then dividing by the number of values in the list.[32] Example: For the data set {1, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the mean is 21.

Mean absolute deviation. A measure of variation in a set of numerical data, computed by adding the distances between each data value and the mean, then dividing by the number of data values. Example: For the data set {2, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the mean absolute deviation is 20.

Median. A measure of center in a set of numerical data. The median of a list of values is the value appearing at the center of a sorted version of the list—or the mean of the two central values, if the list contains an even number of values. Example: For the data set {2, 3, 6, 7, 10, 12, 14, 15, 22, 90}, the median is 11.

Midline. In the graph of a trigonometric function, the horizontal line halfway between its maximum and minimum values.

Multiplication and division within 100. Multiplication or division of two whole numbers with whole number answers, and with product or dividend in the range 0-100. Example: 72 ÷ 8 = 9.

Multiplicative inverses. Two numbers whose product is 1 are multiplicative inverses of one another. Example: 3/4 and 4/3 are multiplicative inverses of one another because 3/4 × 4/3 = 4/3 × 3/4 = 1.

Number line diagram. A diagram of the number line used to represent numbers and support reasoning about them. In a number line diagram for measurement quantities, the interval from 0 to 1 on the diagram represents the unit of measure for the quantity.

Percent rate of change. A rate of change expressed as a percent. Example: if a population grows from 50 to 55 in a year, it grows by 5/50 = 10% per year.

Probability distribution. The set of possible values of a random variable with a probability assigned to each. Properties of operations. See Table 3 in this Glossary.

Properties of equality. See Table 4 in this Glossary.

Properties of inequality. See Table 5 in this Glossary.

Properties of operations. See Table 3 in this Glossary.

Probability. A number between 0 and 1 used to quantify likelihood for processes that have uncertain outcomes (such as tossing a coin, selecting a person at random from a group of people, tossing a ball at a target, or testing for a medical condition).

Probability model. A probability model is used to assign probabilities to outcomes of a chance process by examining the nature of the process. The set of all outcomes is called the sample space, and their probabilities sum to 1. *See also:* uniform probability model.

Random variable. An assignment of a numerical value to each outcome in a sample space.

[31] Adapted from Wisconsin Department of Public Instruction, *op. cit*.

[32] [4]To be more precise, this defines the *arithmetic mean*.

Rational expression. A quotient of two polynomials with a non-zero denominator.

Rational number. A number expressible in the form a/b or $-a/b$ for some fraction a/b. The rational numbers include the integers.

Rectilinear figure. A polygon all angles of which are right angles.

Rigid motion. A transformation of points in space consisting of a sequence of one or more translations, reflections, and/or rotations. Rigid motions are here assumed to preserve distances and angle measures.

Repeating decimal. The decimal form of a rational number. *See also:* terminating decimal.

Sample space. In a probability model for a random process, a list of the individual outcomes that are to be considered.

Scatter plot. A graph in the coordinate plane representing a set of bivariate data. For example, the heights and weights of a group of people could be displayed on a scatter plot.[33]

Similarity transformation. A rigid motion followed by a dilation.

Tape diagram. A drawing that looks like a segment of tape, used to illustrate number relationships. Also known as a strip diagram, bar model, fraction strip, or length model.

Terminating decimal. A decimal is called terminating if its repeating digit is 0.

Third quartile. For a data set with median M, the third quartile is the median of the data values greater than M. Example: For the data set {2, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the third quartile is 15. *See also:* median, first quartile, interquartile range.

Transitivity principle for indirect measurement. If the length of object A is greater than the length of object B, and the length of object B is greater than the length of object C, then the length of object A is greater than the length of object C. This principle applies to measurement of other quantities as well.

Uniform probability model. A probability model which assigns equal probability to all outcomes. *See also:* probability model.

Vector. A quantity with magnitude and direction in the plane or in space, defined by an ordered pair or triple of real numbers.

Visual fraction model. A tape diagram, number line diagram, or area model.

Whole numbers. The numbers 0, 1, 2, 3, ….

[33] Adapted from Wisconsin Department of Public Instruction, *op. cit*.

TABLE 1. Common addition and subtraction situations[34]

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2 + 3 = ?	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? 2 + ? = 5	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? ? + 3 = 5
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? 5 – 2 = ?	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? 5 – ? = 3	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? ? – 2 = 3

	Total Unknown	Addend Unknown	Both Addends Unknown[1]
Put Together/ Take Apart[2]	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ?	Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + ? = 5, 5 – 3 = ?	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare[3]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 – 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? 2 + 3 = ?, 3 + 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? 5 – 3 = ?, ? + 3 = 5

[1] These take apart situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean makes or results in but always does mean is the same number as. [2] Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation, especially for small numbers less than or equal to 10. [3] For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using more for the bigger unknown and using less for the smaller unknown). The other versions are more difficult.

[34] Adapted from Box 2-4 of Mathematics Learning in Early Childhood, National Research Council (2009, pp.32, 33).

Table 2.Common multiplication and division situations.[35]

	Unknown Product	Group Size Unknown ("How many in each group?" Division)	number of Groups Unknown ("How many groups?" Division)
	3 × 6 ?	3 × ? = 18, and 18 ÷ 3 = ?	? × 6 = 18, and 18 ÷ 6 ?
equal Groups	There are 3 bags with 6 plums in each bag. How many plums are there in all? *Measurement example*. You need 3 lengths of string, each 6 inches long. How much string will you need altogether?	If 18 plums are shared equally into 3 bags, then how many plums will be in each bag? *Measurement example*. You have 18 inches of string, which you will cut into 3 equal pieces. How long will each piece of string be?	If 18 plums are to be packed 6 to a bag, then how many bags are needed? *Measurement example*. You have 18 inches of string, which you will cut into pieces that are 6 inches long. How many pieces of string will you have?
arrays,[4] area[5]	There are 3 rows of apples with 6 apples in each row. How many apples are there? *Area example*. What is the area of a 3 cm by 6 cm rectangle?	If 18 apples are arranged into 3 equal rows, how many apples will be in each row? *Area example*. A rectangle has area 18 square centimeters. If one side is 3 cm long, how long is a side next to it?	If 18 apples are arranged into equal rows of 6 apples, how many rows will there be? *Area example*. A rectangle has area 18 square centimeters. If one side is 6 cm long, how long is a side next to it?
Compare	A blue hat costs $6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost? *Measurement example*. A rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?	A red hat costs $18 and that is 3 times as much as a blue hat costs. How much does a blue hat cost? *Measurement example*. A rubber band is stretched to be 18 cm long and that is 3 times as long as it was at first. How long was the rubber band at first?	A red hat costs $18 and a blue hat costs $6. How many times as much does the red hat cost as the blue hat? *Measurement example.* A rubber band was 6 cm long at first. Now it is stretched to be 18 cm long. How many times as long is the rubber band now as it was at first?
General	$a \times b = ?$	$a \times ? = p$, and $p \div a = ?$	$? \times b = p$, and $p \div b = ?$

[4]The language in the array examples shows the easiest form of array problems. A harder form is to use the terms rows and columns: The apples in the grocery window are in 3 rows and 6 columns. How many apples are in there? Both forms are valuable.[5]Area involves arrays of squares that have been pushed together so that there are no gaps or overlaps, so array problems include these especially important measurement situations.

[35] The first examples in each cell are examples of discrete things. These are easier for students and should be given before the measurement examples.

Table 3. The properties of operations. Here a, b and c stand for arbitrary numbers in a given number system. The properties of operations apply to the rational number system, the real number system, and the complex number system.

Associative property of addition	(a + b) + c = a + (b + c)
Commutative property of addition	a + b = b + a
Additive identity property of 0	a + 0= 0 +a = a
Existence of additive inverses	For every a there exists –a so that a + (–a) =(–a) + a = 0.
Associative property of multiplication	(a × b) × c = a × (b × c)
Commutative property of multiplication	a × b = b × a
Multiplicative identity property of 1	a × 1 = 1 × a = a
Existence of multiplicative inverses	For every a ≠ 0 there exists 1/a so that a × 1/a = 1/a × a = 1.
Distributive property of multiplication over addition	a × (b + c)= a × b + a × c

Table 4. The properties of equality. Here a, b and c stand for arbitrary numbers in the rational, real, or complex number systems.

Reflexive property of equality	a = a
Symmetric property of equality	If a = b, then b = a.
Transitive property of equality	If a = b and b = c, then a = c.
Addition property of equality	If a = b, then a + c = b + c.
Subtraction property of equality	If a = b, then a – c = b – c.
Multiplication property of equality	If a = b, then a × c = b × c.
Division property of equality	If a = b and c ≠ 0, then a ÷ c = b ÷ c.
Substitution property of equality	If a = b, then b may be substituted for a in any expression containing a.

Table 5. The properties of inequality. Here a, b and c stand for arbitrary numbers in the rational or real number systems.

Exactly one of the following is true: a < b, a = b, a > b.
If a > b and b > c then a > c.
If a > b, then b < a.
If a > b, then –a < –b.
If a > b, then a ± c > b ± c.
If a > b and c > 0, then a × c > b × c.
If a > b and c < 0, then a × c < b × c.
If a > b and c > 0, then a ÷ c > b ÷ c.
If a > b and c < 0, then a ÷ c < b ÷ c.

HIGH SCHOOL PRACTICAL LIVING

(HEALTH AND PHYSICAL EDUCATION)

Kentucky Core Academic Standards – Practical Living – High School

The purpose of health education is to help students acquire an understanding of health concepts and skills and to apply them in making healthy decisions to improve, sustain and promote personal, family and community health.

The high school health education course provides students with an opportunity to integrate a variety of health concepts, skills and behaviors to plan for their personal health goals. These include prevention of disease and chemical addiction for the promotion of a healthy lifestyle. Students demonstrate comprehensive health knowledge and skills. Their behaviors reflect a conceptual understanding of the issues associated with maintaining good personal health. Students see themselves as having a role in creating a healthy lifestyle for themselves as individuals, for their families and for the larger community. They serve the community through the practice of health-enhancing behaviors that promote wellness throughout life.

Physical Education plays an important role in every student's physical, mental and social well-being. The physically educated student understands and seeks the benefits of a healthy and physically active life. Every student, regardless of physical ability or background, should have the opportunity to pursue and enjoy these benefits, which help to motivate a commitment to fitness throughout life. Physical Education also provides significant opportunities for learning those social skills that are important for cooperation and individual success. Students in high school are proficient in all fundamental movement skills and skill combinations and are competent in self-selected physical activities that they are likely to participate in throughout life. They understand and apply key movement and fitness principles and concepts for all activities in which they demonstrate competence. They develop the ability to understand and anticipate how physical activity interests and abilities change across a lifetime. Students demonstrate competency in a variety lifetime physical activities and plan, implement, self-assess and modify a personal fitness plan.

The Health and Physical Education content standards at the high school level are directly aligned with Kentucky's **Academic Expectations.** The Health and Physical Education standards are organized around five "Big Ideas" that are important to the discipline of health and physical education. These big ideas are: Personal Wellness, Nutrition, Safety, Psychomotor Skills and Lifetime Physical Wellness. The Big Ideas are conceptual organizers for health and physical education and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to health and physical education. The understandings represent the desired results- what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lessons plans.

Skills and concepts describe the ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for health and physical education are fundamental to health literacy and build on prior learning.

The health and physical education program provides a connection to Kentucky's Learning Goals 3 (self-sufficient individuals) and Learning Goal 4 (responsible group member), which are included in Kentucky statue, but they are not included in the state's academic assessment program. These connections provide a comprehensive link between essential content, skills and abilities important to learning. In addition Learning Goal 5 (think and solve problems) and Learning Goal 6 (connect and integrate knowledge) are addressed in health and physical education.

All physical education courses taught in the state of Kentucky must be in compliance with the Federal Special Education Law and Title IX and shall not include practice for or participation in interscholastic athletics.

Big Idea: Personal Wellness (Health Education)

Wellness is maximum well-being or total health. Personal wellness is a combination of physical, mental, emotional, spiritual and social well-being. It involves making behavioral choices and decisions each day that promote an individual's physical well-being, the prevention of illnesses and diseases and the ability to remain, physically, mentally, spiritually, socially and emotionally healthy.

Academic Expectations

2.29 Students demonstrate skills that promote individual well-being and healthy family relationships.
2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.32 Students demonstrate strategies for becoming and remaining mentally and emotionally healthy.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
4.1 Students effectively use interpersonal skills.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use a decision-making process to make informed decisions among options.

High School Enduring Knowledge – Understandings

Students will understand that

- individuals have a responsibility to advocate for personal, family and community health.
- inter and intrapersonal communication skills are needed to enhance individual well-being and healthy relationships.
- physical, social, emotional and mental changes occur during adolescence and throughout life.
- decisions regarding sexuality have short and long term consequences and responsibilities.
- the environment, lifestyle, family history, peers and other factors impact physical, social, mental and emotional health.
- culture, values (e.g., individual, family and community) media and use of technology (e.g., television, computers, MP3 Players, electronic/arcade games) can influence personal behavioral choices.
- behavioral choices affect physical, mental, emotional and social well-being and can have positive or negative consequences on one's health.
- positive health habits can help prevent injuries and spreading of diseases to self and others.
- self-management and coping strategies can enhance mental and emotional health.
- a variety of resources are available to inform, treat and counsel individuals with physical, mental, social and emotional health needs.

Big Idea: Personal Wellness (Health Education) – Continued

High School Skills and Concepts – Personal and Physical Health
Students will

- understand the importance of assuming responsibility for personal health behaviors by:
  - predicting how decisions regarding health behaviors have consequences for self and others
  - explaining how body system functions can be maintained and improved (e.g., exercise, nutrition, safety)
  - explaining how decision-making relates to responsible sexual behavior (e.g., abstinence, preventing pregnancy, preventing HIV/STDs), impacts physical, mental and social well being of an individual
- apply goal-setting and decision-making skills in developing, implementing and evaluating a personal wellness plan
- evaluate the effectiveness of communication methods for expressing accurate health information and ideas
- evaluate how an individual's behaviors and choices of diet, exercise and rest affect the body

High School Skills and Concepts – Growth and Development
Students will

- explain basic structures and functions of the reproductive system as it relates to the human life cycle (e.g., conception, birth, childhood, adolescence, adulthood)

High School Skills and Concepts – Social, Mental and Emotional Health
Students will

- demonstrate social interaction skills by:
  - identifying and utilizing management techniques needed for dealing with intrapersonal and interpersonal relationships throughout life
  - using and explaining the importance of effective social interaction skills (e.g., respect, self-advocacy, cooperation, communication, identifying different perspectives and points of view, empathy, friendship)
  - recommending and justifying effective strategies (e.g., problem solving, decision making, refusal skills, anger management, conflict resolution) for responding to stress, conflict, peer pressure and bullying
  - identifying and explaining changes in roles, responsibilities and skills needed to effectively work in groups throughout life (e.g., setting realistic goals, time and task management, planning, decision- making process, perseverance)
- recommend and justify effective self-management and coping strategies (e.g., setting realistic goals, time, task and stress management, decision making, learning style preference, perseverance) for maintaining mental and emotional health
- demonstrate the ability to use various strategies when making decisions related to health needs and risks of young adults
- demonstrate refusal, negotiation and collaboration skills to use in avoiding potential harmful situations

Big Idea: Personal Wellness (Health Education) – Continued

High School Skills and Concepts – Family and Community Health
Students will

- access and use a variety of resources from home, school and community that provide valid health information
- understand and analyze how personal, family and community health can be influenced and challenged by:
  - family traditions/values
  - peer pressure
  - technology and media messages
  - cultural beliefs and diversity
  - interrelationships between environmental factors and community health
- use print and non-print sources to:
  - analyze how the prevention and the control of health problems are influenced by research and medical advances
  - investigate the role of health care providers in disease prevention
  - analyze how public health policies and government regulations influence health promotion and disease prevention

High School Skills and Concepts – Communicable, Non-Communicable and Chronic Diseases Prevention
Students will

- demonstrate an understanding of diseases by:
  - describing symptoms, causes, patterns of transmission, prevention and treatments of communicable diseases (colds, flu, mononucleosis, hepatitis, HIV/STD, tuberculosis)
  - describing symptoms, causes, patterns of transmission, prevention and treatments of non-communicable diseases (cancer, cardiovascular disease, diabetes, obesity, asthma, emphysema)
- explore family history, environment, lifestyle and other risk factors related to the cause or prevention of disease and other health problems
- demonstrate an understanding of how to maintain a healthy body by:
  - analyzing the impact of personal health behaviors on the functioning of body systems
  - analyzing how behavior can impact health maintenance and disease prevention during adolescence and adulthood

High School Skills and Concepts – Alcohol, Tobacco and Other Drugs
Students will

- demonstrate an understanding of the use and misuse of alcohol, tobacco and other drugs by:
  - distinguishing between legal (e.g., over the counter, prescription drugs) and illegal drugs (e.g., inhalants, marijuana, stimulants, depressants) and describing how their usage affects the body systems
  - predicting the immediate/long-term effects of alcohol, tobacco and illegal drug usage and analyzing the impact on an individual's health
  - recommending interventions (e.g., cease enabling activities), treatments (e.g., AA, outpatient therapy, group therapy) and other strategies (e.g., enhancing self esteem, building skills for success) as forms of help for negative behaviors or addictions (e.g., drug addictions, eating disorders)

Big Idea: Nutrition (Health Education)

Proper nutrition is critical to good health. To maintain a healthy weight, good dietary habits and physical activity are essential. Nutritious foods are necessary for growth, development and maintenance of healthy bodies.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
3.2 Students will demonstrate the ability to maintain a healthy lifestyle.
3.5 Students will demonstrate self-control and self-discipline.
5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use decision-making process to make informed decisions among options.

High School Enduring Knowledge – Understandings

Students will understand that

- nutritional choices affect an individual's physical, mental, emotional and social well being.
- nutrients have a role in the development of an individual's health.
- resources (e.g., Food Guide Pyramid, Dietary Guidelines for Americans, United States Department of Agriculture (USDA), National Dairy Council) are available to assist in making nutritional choices.
- individuals, families and community values influence nutritional choices.

High School Skills and Concepts

Students will

- create meal plans utilizing print and non-print resources (e.g., Food Guide Pyramid (FGP), Dietary Guidelines for Americans, United States Department of Agriculture (USDA), National Dairy council)
- evaluate healthy nutritional practices (e.g., meal planning, food selection, reading labels, weight control, special nutritional needs) for a variety of dietary needs
- analyze and evaluate the positive and negative impact of food selections on maintaining and promoting health
- identify issues, problems and solutions related to extreme eating behaviors (overeating, obesity, anorexia, bulimia)
- analyze factors (e.g., geography, family, cultural background, convenience, cost, advertising, friends, personal taste) that influence healthy food choices
- evaluate the role of nutrients and food sources in the growth and development of healthy bodies
- evaluate nutritional resources from home, school and community that provide valid health information

Big Idea: Safety (Health Education)

Accidents are a major cause of injury and death to children and adolescents. Unintentional injuries involving a motor vehicle, falls, drowning, fires, firearms and poisons can occur at home, school and work. Safe behavior protects a person from danger and lessens the effects of harmful situations.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
3.2 Students will demonstrate the ability to maintain a healthy lifestyle.
4.3 Students individually demonstrate consistent, responsive and caring behavior.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.1 Students use skills such as analyzing, prioritizing, categorizing, evaluating and comparing to solve a variety of problems in real-life situations.
5.4 Students use a decision-making process to make informed decisions among-options.

High School Enduring Knowledge – Understandings

Students will understand that

- safety practices and procedures help to prevent injuries and provide a safe environment.
- community, state, federal and international resources are available to assist in hazardous situations.
- proper procedures must be used in emergency situations.

High School Skills and Concepts

Students will

- analyze how responsible use of machinery and motorized vehicles (e.g., all terrain vehicle, motorcycle, automobile, personal watercraft) and firearms reduce the risk of accidents and save lives
- identify and describe potential hazards in home and schools and explain how to prevent injuries
- identify components of safety needed in developing a personal plan for emergency situations (e.g., weather, fire, tornado, lock down) at home or school
- demonstrate proper first-aid procedures (e.g., CPR/rescue breathing) for responding to emergency situations (e.g., falls, drowning, choking, bleeding, shock, poisons, burns, temperature-related emergencies, allergic reactions, broken bones, overdose, heart attacks, seizures) and explain how they help reduce the severity of injuries and save lives
- demonstrate refusal, negotiation and collaboration skills needed to avoid potentially harmful situations
- identify and access the available local, state, federal and international health and safety agencies (e.g., World Health Organization, Peace Corp, Center for Disease Control and Prevention (CDC), Armed Forces) and explain the services they provide
- use reliable safety resources and guidelines to help in avoiding injuries and dangerous situations (e.g., internet use, vehicles, firearms, watercraft)
- demonstrate communications skills needed in emergency situations
- explain safety practices needed when assuming responsibilities (e.g., child care, house-sitting, elderly care, pet care) in caring for animals, property and other individuals

Big Idea: Psychomotor Skills (Physical Education)

Cognitive information can be used to understand and enhance the development of motor skills such as movement sequences and patterns. Individuals who understand their bodies and how to perform various movements will be safer and more productive in recreation and work activities. Development of psychomotor skills contributes to the development of social and cognitive skills.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.34 Students perform physical movements skills effectively in a variety of settings.
2.35 Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.
4.1 Students effectively use interpersonal skills.

High School Enduring Knowledge – Understandings

Students will understand that

- movement concepts, principles, strategies and tactics apply to the learning and performance of physical activities.
- motor skills and movement patterns allow individuals to perform a variety of physical activities and to achieve a degree of success that make the activities enjoyable.
- basic and advance skills and tactics need to be refined, combined and varied in the development of specialized skills.

High School Skills and Concepts

Students will

- identify and describe the mechanical principles (e.g., force, rotation, extension, leverage) that apply to movement skills in physical activities
- analyze the contribution mechanical principles have in improving movement performance
- explain how successful performance is impacted by physical, intellectual and emotional behaviors
- provide examples of how basic technical skills can help overcome certain physical limitations (e.g., height, muscle development)
- explain the role the body (e.g., muscles, bones) has in the performance of skills and tactics used in sports and other physical activities
- recognize physical activity as an opportunity for positive social and group interaction
- evaluate how an analysis of specialized movement patterns (e.g., golf club swing, shooting a basketball) and sequence evaluation (e.g., positioning, performing, follow through) can be used to detect and correct errors in performances

Big Idea: Lifetime Physical Wellness (Physical Education)

Lifetime wellness is health-focused. The health-related activities and content utilized are presented to help students become more responsible for their overall health status and to prepare each student to demonstrate knowledge and skills that promote physical activity throughout their lives. Physical education uses physical activity as a means to help students acquire skills, fitness, knowledge and attitudes that contribute to their optimal development and well-being. Physical, mental, emotional and social health is strengthened by regular involvement in physical activities.

Academic Expectations

2.31 Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.34 Students perform physical movements skills effectively in a variety of settings.
2.35 Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.
3.1 Students demonstrate positive growth in self-concept through appropriate tasks or projects.
3.2 Students demonstrate the ability to maintain a healthy lifestyle.
3.7 Students demonstrate the ability to learn on one's own.
4.2 Students use productive team membership skills.

High School Enduring Knowledge – Understandings

Students will understand that

- leisure/recreational or competitive physical activities provide opportunities for self-expression, social interactions and can be enjoyable and challenging.
- regular participation in health-enhancing and personally rewarding physical activities has physical, emotional/mental and social benefits.
- techniques, strategies and practice are important for improving performance of sport skills.
- adhering to rules and procedures, etiquette, cooperation and team work, ethical behavior and positive social interaction impacts the effective participation in sports and physical activities.
- basic components of fitness impacts lifetime physical wellness.
- principles and techniques are used to improve/maintain physical fitness levels throughout life.
- an individual needs a personal plan for achieving and maintaining fitness goals.

Big Idea: Lifetime Physical Wellness (Physical Education) – Continued

High School Skills and Concepts

Students will

- design and implement a personal lifetime leisure/recreational plan that includes challenging and enjoyable physical activities
- evaluate the personal benefits derived from regular participation in leisure/recreational or competitive physical activities as it relates to the quality and quantity of life
- analyze (e.g., through self-assessment) the relationship between and among effort, persistence, practice and improvement as they relate to skill development
- evaluate the impact of techniques used to improve motor skills (e.g., self-evaluation, individualized coaching, feedback)
- participate regularly in physical activity
- when participating in a variety of physical activities, sports and games:
  - identify and apply rules of behavior and fair play (e.g., accepting authoritative decisions, assessing one's own performance level, accepting skills and abilities of others through verbal and nonverbal actions for spectators and/or participants)
  - analyze the value of rules, fair play, cooperation, sportsmanship, teamwork and conflict resolution
  - develop and compare effectiveness of game strategies for offensive and defensive play
- design, implement, assess and refine a personal fitness plan based on the FITT Principle (Frequency, Intensity, Type, Time)
- compare and contrast lifetime activities (e.g., golf, tennis, walking, dance, yoga, swimming) that improve or maintain the components of fitness (muscular strength, muscular endurance, flexibility, body composition, cardio-respiratory endurance)
- explain how the systems of the body (e.g., muscular, skeletal, nervous, respiratory, circulatory) respond to exercise
- analyze and explain the relationships between caloric intake and caloric expenditure in relation to body composition, nutrition and physical activity

HIGH SCHOOL SCIENCE

Kentucky Core Academic Standards – Science – High School

The science program in high school should provide opportunities for students to think and work like scientists. Applying factual knowledge in real-world scientific contexts allows students to refine the abilities that are the basis of scientific inquiry. These abilities include: (1) identifying questions and concepts that guide scientific investigations, (2) designing and conducting scientific investigations, (3) using technology and mathematics to improve investigations and communications, (4) formulating and revising scientific explanations and models using logic and evidence, (5) recognizing and analyzing alternative explanations and models and (6) communicating and defending a scientific argument.

Students should have opportunities to work individually and in groups of varying size and composition in order to conduct investigations, process information and discuss/debate important scientific concepts. Students must have regular opportunities to share their ideas with others and to test questions they generate as a result of their learning experiences.

In our technologically advanced society, information gathering must extend beyond the classroom walls and must involve a variety of credible sources. Scientists also place a high value on accurate record keeping and open communication of findings. The science classroom should mirror this by emphasizing multiple, varied and consistent methods of documenting and communicating learning.

The scientific content standards at the high school level are directly aligned with Kentucky's **Academic Expectations**. Science standards are organized around seven “Big Ideas” that are important to the discipline of science. These big ideas are: Structure and Transformation of Matter, Motion and Forces, The Earth and the Universe, Unity and Diversity, Biological Change, Energy Transformations and Interdependence. The Big Ideas are conceptual organizers for science and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of science. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for science are fundamental to scientific literacy, scientific inquiry and build on prior learning.

In order to effectively implement the Kentucky Core Academic Standards, teachers must have a common understanding of some of the terms referenced throughout this document;

> **Investigate/Explore-** compile a variety of information through hands-on experiences (utilizing process skills such as measuring, observing, questioning, classifying, predicting and inferring) and/or consult a variety of print and non-print media in order to formulate conclusions and/or gather evidence/data.

Experiment/Test- conduct a scientifically valid and controlled investigation, collecting and analyzing data. Use findings and conclusions to form logical explanations and openly share.

Research- consult of a variety of credible sources of information to gain knowledge, answer questions and support conclusions and explanations.

Model- represent a phenomenon or concept. Models are often conceptual in nature, and the term ‘model’ does not always imply a physical product.

Big Idea: Structure and Transformation of Matter (Physical Science)

A basic understanding of matter is essential to the conceptual development of other big ideas in science. By high school, students will be dealing with evidence from both direct and indirect observations (microscopic level and smaller) to consider theories related to change and conservation of matter. The use of models (and an understanding of their scales and limitations) is an effective means of learning about the structure of matter. Looking for patterns in properties is also critical to comparing and explaining differences in matter.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.

High School Enduring Knowledge – Understandings

Students will understand that

- the configuration of atoms in a molecule determines the molecule's properties. Shapes are particularly important in how molecules interact with others.
- an enormous variety of biological, chemical and physical phenomena can be explained by changes in the arrangement and motion of atoms and molecules.
- when elements are listed in order by their number of protons, the same sequence of properties appears over and over again in the list. The structure of the periodic table reflects this sequence of properties, which is caused by the repeating pattern of outermost electrons.
- not all atoms of an element are truly identical. Some may vary in their number of neutrons (isotopes) or electrons (ions). These variations result in properties which are different than the more common forms of that element.
- Changes of state occur when enough energy is added to or removed from the atoms/molecules of a substance to change their average energy of vibration. Most solids expand as they are heated, and if sufficient energy is added the atoms/molecules lose their rigid structure and become free to move past each other as a liquid. In gases the energy of vibration is enough that individual atoms/molecules are free to move independently.
- elements are able to form an almost limitless variety of chemical compounds by the sharing or exchange of their electrons. The rate at which these combinations occur is influenced by a number of variables. The compounds produced may vary tremendously in their physical and chemical properties.
- chemical reactions have a variety of essential real-world applications, such as oxidation and various metabolic processes.
- a system may stay the same because nothing is happening or because things are happening but exactly counterbalance one another.
- accurate record-keeping, openness and replication are essential for maintaining credibility with other scientists and society.

Big Idea: Structure and Transformation of Matter (Physical Science) – Continued

High School Skills and Concepts

Students will

- classify samples of matter from everyday life as being elements, compounds, or mixtures
- Investigate the kinetic molecular theory of matter
- construct and/or interpret diagrams that illustrate ionic and covalent bonding
- predict compound formation and bond type as either ionic or covalent
- identify and test variables that affect reaction rates
- use evidence/data from chemical reactions to predict the effects of changes in variables (concentration, temperature, properties of reactants, surface area and catalysts)
- explore the relationships among temperature, particle number, pressure and volume in the Universal Gas Law
- explain the organizational structure (design) and communicate the usefulness of the Periodic Table to determine potential combinations of elements
- investigate the role of intermolecular or intramolecular interactions on the physical properties (solubility, density, polarity, boiling/melting points) of compounds
- relate the chemical behavior of an element, including bonding, to its location on the periodic table
- relate the structure of water to its function as the universal solvent
- design and conduct experiments to determine the conductivity of various materials
- create and/or interpret graphs and equations to depict and analyze patterns of change
- explore real-life applications of a variety of chemical reactions (e.g., acids and bases, oxidation, rusting, tarnishing) and communicate findings/present evidence in an authentic form (transactive writing, public speaking, multimedia presentations)
- generate investigable questions and conduct experiments or non-experimental research to address them, using evidence to defend conclusions

Big Idea: Motion and Forces (Physical Science)

Whether observing airplanes, baseballs, planets, or people, the motion of all bodies is governed by the same basic rules. At the middle level, qualitative descriptions of the relationship between forces and motion will provide the foundation for quantitative applications of Newton's Laws. These ideas are more fully developed at the high school level along with the use of models to support evidence of motion in abstract or invisible phenomena such as electromagnetism.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

High School Enduring Knowledge – Understandings

Students will understand that

- representing and describing motion in a variety of ways provides data that can be used to construct explanations and make predictions about real-life phenomena.
- the usefulness of a model can be tested by comparing its predictions to actual observations in the real world. But a close match does not necessarily mean that the model is the only "true" model or the only one that would work.
- all motion is relative to whatever frame of reference is chosen, for there is no motionless frame from which to judge all motion.
- the strength of the gravitational force between objects is proportional to the masses and weakens rapidly with increasing distance between them.
- electricity and magnetism are two inseparable aspects of the same force (electromagnetism). Moving electrical charges produce magnetic forces and moving magnetic fields produce electrical forces. Electrical current is due to the motion of charge and has a specific direction.
- electromagnetic forces acting within and between atoms are vastly stronger than the gravitational forces acting between the atoms. At the atomic level, electric forces between oppositely charged electrons and protons hold atoms and molecules together and thus are involved in all chemical reactions. On a larger scale, these forces hold solid and liquid materials together and act between objects when they are in contact—as in sticking or sliding friction.
- the forces that hold the nucleus of an atom together are much stronger than the electromagnetic force. That is why such great amounts of energy are released from the nuclear reactions in the sun and other stars.

Big Idea: Motion and Forces (Physical Science) – Continued

High School Skills and Concepts
Students will

- design and conduct investigations involving the motion of objects and report the results in a variety of ways
- investigate Newton's Laws of Motion and Gravitation. Experimentally test inertia and gravitational acceleration
- experimentally test conservation of momentum. Use tables, charts and graphs in making arguments and claims in oral and written presentations
- create and analyze graphs, ensuring that they do not misrepresent results by using inappropriate scales or by failing to specify the axes clearly
- develop investigable questions that guide explorations of the interrelationship between electricity and magnetism
- investigate the attraction and repulsion of electrical charges to predict the behavior of charged objects
- create conceptual and mathematical models of motion and test them against real-life phenomena
- explain why the strength of the nuclear force is responsible for the great energy release involved in nuclear reactions
- predict which forces would be predominant in a given system and explain

Big Idea: The Earth and the Universe (Earth/Space Science)

The Earth system is in a constant state of change. These changes affect life on Earth in many ways. At the high school level, most of the emphasis is on why these changes occur. An understanding of systems and their interacting components will enable students to evaluate supporting theories of Earth changes. The use of models and observance of patterns to explain common phenomena is essential to building a conceptual foundation and supporting ideas with evidence at all levels. Patterns play an important role as students seek to develop a conceptual understanding of gravity in their world and in the universe. High school is the time to bring all of the ideas together to look at the universe as a whole. Students will use evidence to evaluate and analyze theories related to the origin of the universe and all components of the universe.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

High School Enduring Knowledge – Understandings

Students will understand that

- gravity played an essential role in the formation of the universe and is one of the fundamental forces that controls the function of the universe and the systems within it.
- current estimates of the ages of the Earth (4.6 billion years) and the universe (10+ billion years) are based on a variety of measurement techniques that have unique strengths and limitations. The same evidence that establishes the extreme age of the universe also indicates its vastness.
- stars have cycles of birth and death, and the lives of large stars end in explosions that provide the elements to create new stars and planets. All living things on Earth are also formed from this recycled matter.
- the speed of light is dwarfed by the vastness of the universe, resulting in the human view of the sky being essentially a “look back in time” as we view light that was emitted long in the past and has been traveling across the cosmos to reach Earth.
- the shape and location of the continents have been gradually changing for millions of years because density differences inside the mantle result in convection currents. These changes, as well as more rapid ones (e.g. earthquakes, volcanoes, tsunamis) can impact living organisms.
- mathematical models and computer simulations are used in studying evidence from many sources to form a scientific account of the universe.
- scientists rely on increasingly sophisticated methods of measurement in order to investigate a variety of phenomena that were previously immeasurable.
- curiosity, honesty, openness and skepticism are highly regarded in science, and are incorporated into the way science is carried out.

Big Idea: The Earth and the Universe (Earth/Space Science) -Continued

High School Skills and Concepts
Students will

- compare methods used to measure the ages of geologic features
- research the historical rise in acceptance of the theory of Plate Tectonics and the geological/biological consequences of plate movement
- analyze the supporting evidence for the nebular theory of formation of the solar system
- analyze the supporting evidence for the Big Bang theory of formation of the universe
- explain the role of gravity in the formation and function of the universe
- investigate, describe and document patterns of interaction of matter and gravity
- describe the life cycle of stars and the products/consequences of their deaths
- explain how technological solutions permit the study of phenomena too faint, small, distant or slow to be directly measured
- employ scientific notation to communicate and compare astronomical phenomena
- explore real-life implications of current findings in Earth/space research and communicate findings in an authentic form, exemplifying the traits of curiosity, honesty, openness and skepticism

Big Idea: Unity and Diversity (Biological Science)

All matter is comprised of the same basic elements, goes through the same kinds of energy transformations, and uses the same kinds of forces to move. Living organisms are no exception. At the high school level, an in-depth study of the specialization and chemical changes occurring at the cellular level builds upon the foundational ideas developed earlier to investigate deoxyribonucleic acid (DNA) and effects of alterations in DNA for an individual organism as well as for a species. Emphasis at every level should be placed upon the understanding that while every living thing is composed of similar small constituents that combine in predictable ways, it is the subtle variations within these small building blocks that account for both the likenesses and differences in form and function that create the diversity of life.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.

High School Enduring Knowledge – Understandings

Students will understand that

- the many body cells in an individual can be very different from one another even though they are all descended from a single cell and thus have essentially identical genetic instructions. Different parts of the instructions are used in different types of cells.
- within every cell are specialized parts for the transport of materials, energy transfer, protein building, waste disposal, information feedback and even movement. In addition, most cells in multi-cellular organisms perform specialized functions that others do not.
- DNA, composed of 4 nucleic acids, serves as the blueprint for the production of a variety of proteins. These dynamic and complicated proteins facilitate practically every function/process that occurs within the cell.
- the information passed from parents to offspring is coded in DNA molecules. The sorting and recombination of genes through sexual reproduction results in a great variety of gene combinations that can be used to make predictions about the potential traits of offspring.
- some new gene combinations make little difference, some can produce offspring with new and perhaps enhanced capabilities, while some may reduce the ability of the offspring to survive.
- the degree of kinship between organisms or species can be estimated from the similarity of their DNA sequences, which often closely matches their classification based on anatomical similarities.
- in all organisms and viruses, the instructions for specifying the characteristics are carried in nucleic acids. The chemical and structural properties of nucleic acids determine how the genetic information that underlies heredity is both encoded in genes and replicated.

Big Idea: Unity and Diversity (Biological Science) – Continued

High School Skills and Concepts
Students will

- analyze the parts within a cell responsible for particular processes and create analogous models for those processes
- identify a variety of specialized cell types and describe how these differentiated cells contribute to the function of an individual organism as a whole
- investigate the role of genes/chromosomes in the passing of information from one generation to another (heredity)
- graphically represent (e.g., pedigrees, punnet squares) and predict the outcomes of a variety of genetic combinations
- investigate the roles of genetic mutation and variability in contributing to the survival of offspring
- describe the structure of DNA and explain its role in protein synthesis, cell replication and reproduction
- describe and classify a variety of chemical reactions required for cell functions
- describe the processes by which cells maintain their internal environments within acceptable limits
- compare internal, external and metabolic characteristics of organisms in order to classify them into groups using taxonomic nomenclature to describe and justify these classifications
- compare the structures and functions of viruses to cells and describe the role of viruses in causing a variety of diseases or conditions (e.g., AIDS, common cold, smallpox, warts)
- identify and investigate areas of current research/innovation in biological science. Make inferences/predictions of the effects of this research on society and/or the environment and support or defend these predictions with scientific data

Big Idea: Biological Change (Biological Science)

The only thing certain is that everything changes. At the high school level, students evaluate the role natural selection plays in the diversity of species. Modern ideas of evolution provide a scientific explanation for three main sets of observable facts about life on Earth: the enormous number of different life forms we see about us, the systematic similarities in anatomy and molecular chemistry we see within that diversity, and the sequence of changes in fossils found in successive layers of rock that have been formed over more than a billion years.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.

2.6 Students understand how living and nonliving things change over time and the factors that influence the changes.

High School Enduring Knowledge – Understandings

Students will understand that

- the survival of any given species is not assured. There are a variety of factors (e.g. reproductive success, mutation, availability of resources, competition) that may determine if a species flourishes, declines, or eventually becomes extinct.
- the Earth's present-day species developed from earlier, distinctly different species through a process of natural selection. All living things share a common genetic heritage.
- some organisms have greater adaptive capabilities than others, giving them a greater chance of survival under changing environmental conditions. These adaptations may be patterns of behavior as well as physical characteristics.
- the endangerment/ and/or extinction of a species cannot be slowed or prevented without sufficient data to model the interactions of the factors involved.
- in science the term theory is reserved to describe only those ideas that have been well tested through scientific investigation. Scientific theories are judged by how well they fit with other theories, the range of observations they explain, how well they explain observations and their usefulness in predicting new findings. Scientific theories usually grow slowly through contributions from many investigators.

High School Skills and Concepts

Students will

- identify evidence of change in species using fossils, DNA sequences, anatomical similarities, physiological similarities and embryology
- explain the role of natural selection in speciation, adaptation, diversity and phylogeny
- compare variations, tolerances and adaptations (behavioral and physiological) of plants and animals in different biomes
- generate possible solutions to real-world problems of endangered and extinct species and predict the impact of a variety of change
- predict the likelihood of survival for a variety of existing species based upon predicted changes in environmental conditions (e.g., global warming, continental drift) and propose methods to prevent the extinction of species with insufficient ability to adapt
- distinguish between a scientific law, theory, hypothesis and unsupported supposition/claim
- investigate the historical development and revision of a variety of accepted scientific laws, theories and claims

Big Idea: Energy Transformations (Unifying Concepts)

Energy transformations are inherent in almost every system in the universe—from tangible examples at the elementary level, such as heat production in simple Earth and physical systems to more abstract ideas beginning at middle school, such as those transformations involved in the growth, dying and decay of living systems. The use of models to illustrate the often invisible and abstract notions of energy transfer will aid in conceptualization, especially as students move from the macroscopic level of observation and evidence (primarily elementary school) to the microscopic interactions at the atomic level (middle and high school levels). Students in high school expand their understanding of constancy through the study of a variety of phenomena. Conceptual understanding and application of the laws of thermodynamics connect ideas about matter with energy transformations within all living, physical and Earth systems.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.

Big Idea: Energy Transformations (Unifying Concepts) – Continued

High School Enduring Knowledge – Understandings
Students will understand that

- transformations that occur within the nuclei of atoms release vastly greater energy than those that involve only electrons, and result in the emission of radiation and/or transformation of elements.
- while the total amount of energy in the universe is constant, the amount that is available for useful transformations is always decreasing. Systems within the universe will cease to function once the energy differential becomes zero.
- waves, including electromagnetic radiation, are an important form of energy transfer. Waves are governed by rules that can be investigated and used to predict/explain their behavior.
- many elements and compounds are involved in continuous cyclic processes where they are stored by and/or flow between organisms and the environment. These processes require a continuous supply of energy to occur.
- radiant energy from the sun is stored in a chemical form in plants as a result of photosynthesis. This energy transformation allows plants to use simple molecules, such as carbon dioxide and water, to assemble the complex molecules needed to increase their mass.
- energy stored in food is released by a series of internal chemical reactions that reorganize the molecules into a form useable by the organism.
- a variety of carbon compounds are essential to the processes that occur in all organisms.
- heat is a manifestation of the random motion and vibrations of atoms or molecules within a substance. Interactions between or among atoms or molecules naturally move toward states of higher disorder.
- many different sources of energy are used for a variety of purposes, including powering machines designed to do useful work. Regardless of function or energy source, the useful energy output of any machine is always less than the total energy input.
- all Earth systems/processes require either an internal or external source of energy to function. Changes to any component, or to the quantity or type of energy input, may influence all components of the system.
- weather and climate are the direct or indirect result of transfer of solar energy, and changes in one part of the system may influence all of the others. The complexity of the system and the number of variables involved requires very complex mathematical models in order to make accurate predictions.
- technological problems often create a demand for new scientific knowledge, and new technologies make it possible for scientists to conduct their research more effectively or to conduct new lines of research. The availability of new technology often sparks scientific advances.
- technology affects society because it solves practical problems and serves human needs. Science affects society by stimulating thought or satisfying curiosity, or by influencing views of the world, or by providing knowledge necessary for new technological advances.

Big Idea: Energy Transformations (Unifying Concepts) – Continued

High School Skills and Concepts
Students will

- classify and describe nuclear reactions and their products
- investigate the forces inside the nucleus and evaluate the risk/benefits of nuclear energy
- apply the law of conservation of energy and explore heat flow in real-life phenomena
- investigate waves, the rules describing wave behavior and energy transfer via waves in real life phenomena (e.g., nuclear medicine, industrial applications)
- investigate the flow of matter and energy between organisms and the environment and model the cyclic nature of this process
- explain the metabolic process of photosynthesis and describe the molecules it assembles to store solar energy
- describe the metabolic processes that allow energy stored in food to be made available to the organism
- explore the composition and function of the carbon compounds involved in metabolism
- apply the concept of entropy to molecular interactions and to interactions within the universe
- analyze a variety of energy sources, their potential uses and their relative costs/benefits
- investigate the relationship of energy input vs. useful energy output in mechanical systems
- model and explain the relationships and energy flow existing in various Earth systems
- use weather data to model the complex interactions responsible for weather and climate
- describe how science and technology interact. Research and investigate the impact of technology on society and how technological advances have driven scientific research

Big Idea: Interdependence (Unifying Concepts)

It is not difficult for students to grasp the general notion that species depend on one another and on the environment for survival. But their awareness must be supported by knowledge of the kinds of relationships that exist among organisms, the kinds of physical conditions that organisms must cope with, the kinds of environments created by the interaction of organisms with one another and their physical surroundings, and the complexity of such systems At the high school level, the concept of an ecosystem should bring coherence to the complex array of relationships among organisms and environments that students have encountered. Students growing understanding of systems in general will reinforce the concept of ecosystems. Stability and change in ecosystems can be considered in terms of variables such as population size, number and kinds of species, productivity and the effect of human intervention.

Academic Expectations

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.

High School Enduring Knowledge – Understandings

Students will understand that

- human beings are part of the Earth's ecosystems. Human activities can, deliberately or inadvertently, alter the equilibrium in ecosystems.
- unique among organisms, humans have the capability to impact other species on a global scale both directly (e.g. selective breeding, genetic engineering, foreign species introductions) and indirectly (e.g. habitat crowding, pollution, climate change).
- the appearance of new species always impacts the environment. In some cases this impact can have global and profound significance (e.g. when ancient bacteria transformed the atmosphere to an oxygen-rich environment).
- every ecosystem contains natural checks and balances, both biotic and abiotic, that serve to limit the size and range of the populations contained within it.
- human creativity, inventiveness and ingenuity have brought new risks as well as improvements to human existence. People control technology and are ultimately responsible for its effects.
- science/technology occasionally provides the means to do questionable things. Decisions about doing these things require exercising a sense of responsibility. Just because something can be done does not mean it should be done.
- the critical assumptions behind any line of reasoning must be made explicit, so that the validity of the position being taken can be judged.

Big Idea: Interdependence (Unifying Concepts) – Continued

High School Skills and Concepts
Students will

- explore ways to eradicate or lessen environmental problems caused by human interaction (e.g., examine programs for habitat restoration or wildlife protection, automotive/industrial emissions standards)
- investigate changes in ecosystems and propose potential solutions to problems by documenting and communicating solutions to others through multi-media presentations
- analyze and describe the effects of events (e.g., fires, hurricanes, deforestation, mining, population growth and municipal development) on environments from a variety of perspectives. Use data to propose ways of lessening impacts perceived as negative
- examine existing models of global population growth and the factors affecting population change (e.g., geography, diseases, natural events, birth/death rates). Propose and defend solutions to identified problems of population change
- analyze examples of environmental changes resulting from the introduction, removal, or reintroductions of indigenous or non-indigenous species to an ecosystem. Use information to predict future impacts of similar changes in other ecosystems
- analyze and synthesize research, for questions about, theories and related technologies that have advanced our understanding of interdependence
- explore the causes, consequences and possible solutions to persistent, contemporary and emerging global issues relating to environmental quality
- Investigate controversial scientific proposals (e.g., human cloning, genetic modification of crops, nuclear waste storage), use scientific evidence/data to support or defend a position and debate the ethical merits of implementing the proposed actions

HIGH SCHOOL SOCIAL STUDIES

Kentucky Core Academic Standards – Social Studies – High School

Districts and schools can arrange the essential high school social studies content within the three-credit requirement to best meet the needs of their students. A local board of education may substitute an integrated, applied, interdisciplinary, or higher level course for a required course if the alternative course provides rigorous content and addresses the same academic expectations.

The primary purpose of social studies is to help students develop the ability to make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world. The skills and concepts found throughout this document reflect this purpose by promoting the belief that students must develop more than an understanding of content. They must also be able to apply the content perspectives of the several academic fields of the social studies to personal and public experiences. By stressing the importance of both content knowledge and its application, the social studies curriculum in Kentucky provides a framework that promotes citizenship for all of our students.

The social studies content standards at the high school level are directly aligned with Kentucky's **Academic Expectations**. Social Studies standards are organized around five “Big Ideas” that are important to the discipline of social studies. The five Big Ideas in social studies are: Government and Civics, Cultures and Societies, Economics, Geography and Historical Perspective. The Big Ideas, which are more thoroughly explained in the pages that follow, are conceptual organizers that are the same at each grade level. This consistency ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of social studies. The understandings represent the desired results - what learning will focus upon and what knowledge students will be able to explain or apply. Understandings can be used to frame development of units of study and lesson plans.

Skills and concepts describe ways that students demonstrate their learning and are specific to each grade level. The skills and concepts for social studies are fundamental to social studies literacy and build on prior learning.

The social studies program includes strong literacy connections, active, hands-on work with concrete materials, and appropriate technologies. The social studies curriculum includes and depends on a number of different types of materials such as textbooks, non-fiction texts, biographies, autobiographies, journals, maps, newspapers, photographs and primary documents. Higher order thinking skills, such as compare, explain, analyze, predict, construct and interpret, are all heavily dependent on a variety of literacy skills and processes. For example, in social studies students must be able to understand specialized vocabulary, identify and comprehend key pieces of information within texts, determine what is fact and what is opinion, relate information across texts, connect new information to prior knowledge and synthesize the information to make meaning.

Although the social studies program for the high school is divided into five areas, each area is designed to interact with the others in an integrated fashion. Because of this integration, students are able to develop broad conceptual understandings in social studies. This style of learning reflects the developmental nature of children.

Big Idea: Government and Civics

The study of government and civics equips students to understand the nature of government and the unique characteristics of American representative democracy, including its fundamental principles, structure, and the role of citizens. Understanding the historical development of structures of power, authority, and governance and their evolving functions in contemporary U.S. society and other parts of the world is essential for developing civic competence. An understanding of civic ideals and practices of citizenship is critical to full participation in society and is a central purpose of the social studies.

Academic Expectations

2.14 Students understand the democratic principles of justice, equality, responsibility, and freedom and apply them to real-life situations.

2.15 Students can accurately describe various forms of government and analyze issues that relate to the rights and responsibilities of citizens in a democracy.

High School Enduring Knowledge – Understandings

Students will understand that

- people form governments to establish order, provide security and accomplish common goals. Governments in the world vary in terms of their sources of power, purposes and effectiveness.
- the Government of the United States, established by the Constitution, embodies the purposes, values and principles (e.g., liberty, justice, individual human dignity, the rules of law) of American representative democracy.
- the Constitution of the United States establishes a government of limited powers that are shared among different levels and branches. The provisions of the U.S. Constitution have allowed our government to change over time to meet the changing needs of our society.
- all citizens of the United States have certain rights and responsibilities as members of a democratic society.
- individual rights in a democracy may, at times, be in conflict with others' individual rights, as well as with the responsibility of government to protect the "common good."
- the United States does not exist in isolation; its democratic form of government has played and continues to play a considerable role in our interconnected world.
- the level of individual civic engagement in a democracy can impact the government's effectiveness.
- the development and ongoing functions of a political system (e.g., elections, political parties, campaigns, political identity and culture, the role of the media) is necessary for a democratic form of government to be effective.

Big Idea: Government and Civics – Continued

High School Skills and Concepts
Students will

- demonstrate an understanding (e.g., illustrate, write, model, present, debate) of the nature of government:
  - examine ways that democratic governments do or do not preserve and protect the rights and liberties of their constituents (e.g., U.N. Charter, Declaration of the Rights of Man, U.N. Declaration of Human Rights, U.S. Constitution)
  - compare purposes and sources of power of various forms of government in the world, and analyze their effectiveness in establishing order, providing security and accomplishing goals
  - evaluate the relationship between and among the U.S. government's response to contemporary issues and societal problems (e.g., education, welfare system, health insurance, childcare, crime) and the needs, wants and demands of its citizens (e.g., individuals, political action committees, special interest groups, political parties)
  - examine conflicts within and among different governments and analyze their impacts on historical or current events
- examine issues related to the intent of the Constitution of the United States and its amendments:
  - explain the principles of limited government (e.g., rule of law, federalism, checks and balances, majority rule, protection of minority rights, separation of powers) and how effective these principles are in protecting individual rights and promoting the "common good"
  - analyze how powers of government are distributed and shared among levels and branches, and how this distribution of powers works to protect the "common good" (e.g., Congress legislates on behalf of the people, the President represents the people as a nation, the Supreme Court acts on behalf of the people as a whole when it interprets the Constitution)
- investigate the rights of individuals (e.g., Freedom of Information Act, free speech, civic responsibilities in solving global issues) to explain how those rights can sometimes be in conflict with the responsibility of the government to protect the "common good" (e.g., homeland security issues, environmental regulations, censorship, search and seizure), the rights of others (e.g., slander, libel), and civic responsibilities (e.g., personal belief/responsibility versus civic responsibility)
- evaluate the impact citizens have on the functioning of a democratic government by assuming responsibilities (e.g., seeking and assuming leadership positions, voting) and duties (e.g., serving as jurors, paying taxes, complying with local, state and federal laws, serving in the armed forces)
- analyze and synthesize a variety of information from print and non-print sources (e.g., books, documents, articles, interviews, Internet, film, media) to research issues, perspectives and solutions to problems

Big Idea: Cultures and Societies

Culture is the way of life shared by a group of people, including their ideas and traditions. Cultures reflect the values and beliefs of groups in different ways (e.g., art, music, literature, religion); however, there are universals (e.g., food, clothing, shelter, communication) connecting all cultures. Culture influences viewpoints, rules and institutions in a global society. Students should understand that people form cultural groups throughout the United States and the World, and that issues and challenges unite and divide them.

Academic Expectations

2.16 Students observe, analyze, and interpret human behaviors, social groupings, and institutions to better understand people and the relationships among individuals and among groups.

2.17 Students interact effectively and work cooperatively with the many ethnic and cultural groups of our nation and world.

High School Enduring Knowledge – Understandings

Students will understand that

- culture is a system of beliefs, knowledge, institutions, customs/traditions, languages and skills shared by a group. Through a society's culture, individuals learn the relationships, structures, patterns and processes to be members of the society.
- social institutions (e.g., government, economy, education, religion, family) respond to human needs, structure society, and influence behavior within different cultures.
- interactions among individuals and groups assume various forms (e.g., compromise, cooperation, conflict, competition) and are influenced by culture.
- culture affects how people in a society behave in relation to groups and their environment.
- a variety of factors promote cultural diversity in a society, a nation, and the world.
- an appreciation of the diverse nature of cultures is essential in our global society.

High School Skills and Concepts

Students will

- demonstrate an understanding of the nature of culture:
  - analyze cultural elements of diverse groups in the United States (Reconstruction to present)
  - describe how belief systems, knowledge, technology, and behavior patterns define cultures
  - analyze historical perspectives and events in the modern world (1500 A.D. to present) and United States (Reconstruction to present) in terms of how they have affected and been affected by cultural issues and elements
- describe and compare how various human needs are met through interactions with and among social institutions (e.g., family, religion, education, government, economy) in the modern world (1500 A.D. to present) and the United States (Reconstruction to present)
- explain or give examples of how communications between groups can be influenced by cultural differences; explain the reasons why conflict and competition (e.g., violence, difference of opinion, stereotypes, prejudice, discrimination, genocide) developed as cultures emerged in the modern world (1500 A.D. to present) and in the United States (Reconstruction to present)
- describe how compromise and cooperation are characteristics that influence interaction (e.g., peace studies, treaties, conflict resolution) in the modern world (1500 A.D. to present) and the United States (Reconstruction to present)
- compare examples of cultural elements (e.g., beliefs, customs/traditions, languages, skills, literature, the arts) of diverse groups today to those of the past, using information from a variety of print and non-print sources (e.g., autobiographies, biographies, documentaries, news media, artifacts)

Big Idea: Economics

Economics includes the study of production, distribution and consumption of goods and services. Students need to understand how their economic decisions affect them, others, the nation and the world. The purpose of economic education is to enable individuals to function effectively both in their own personal lives and as citizens and participants in an increasingly connected world economy. Students need to understand the benefits and costs of economic interaction and interdependence among people, societies, and governments.

Academic Expectations

2.18 Students understand economic principles and are able to make economic decisions that have consequences in daily living.

High School Enduring Knowledge – Understandings

Students will understand that

- the basic economic problem confronting individuals, societies and governments is scarcity; as a result of scarcity, economic choices and decisions must be made.
- economic systems are created by individuals, societies and governments to achieve broad goals (e.g., security, growth, freedom, efficiency, equity).
- markets (e.g., local, national, global) are institutional arrangements that enable buyers and sellers to exchange goods and services.
- all societies deal with questions about production, distribution and consumption.
- a variety of fundamental economic concepts (e.g., supply and demand, opportunity cost) affect individuals, societies and governments.
- our global economy provides for a level of interdependence among individuals, societies and governments of the world.
- the United States Government and its policies play a major role in the performance of the U.S. economy at both the national and international levels.
- in a global economy, interdependence results in economic conditions and policies in one nation affecting economic conditions in other nations.

Big Idea: Economics – Continued

High School Skills and Concepts
Students will

- demonstrate an understanding of the nature of limited resources and scarcity in the modern world (1500 A.D. to present) and the United States (Reconstruction to present):
  - explain how scarcity of resources necessitates choices at both the personal and societal levels, and explain the impact of those choices
  - explain how governments with limited budgets consider revenues, costs and opportunity when planning expenditures
  - describe how economic institutions (e.g., corporations, labor unions, banks, stock markets, cooperatives, partnerships) help to deal with scarcity
- compare and contrast economic systems (e.g., traditional, command, market, mixed), and evaluate their effectiveness in achieving broad social goals (e.g., freedom, efficiency, equity, security)
- analyze free enterprise systems, and explain strategies for maximizing profits based on different roles in the economy (e.g., producers, entrepreneurs, workers, savers and investors)
- describe relationships between and among markets (e.g., local, national, global) and exchange of goods and services:
  - explain factors that influence the supply and demand of products (e.g., supply—technology, cost of inputs, number of sellers; demand—income, utility, price of similar products, consumers' preferences)
  - describe how financial and non-financial incentives influence individuals differently (e.g., discounts, sales promotions, trends, personal convictions)
  - explain or model cause-effect relationships between the level of competition in a market and the number of buyers and sellers
  - research laws and government mandates (e.g., anti-trust legislation, tariff policy, regulatory policy) and analyze their purposes and effects in the United States and in the global marketplace
- investigate the production, distribution, and consumption of goods and services:
  - analyze changing relationships between and among business, labor and government (e.g., unions, anti-trust laws, tariff policy, price controls, subsidies, tax incentives), and examine the effects of those changing relationships on production, distribution and consumption in the United States
  - describe how different factors (e.g., new knowledge, technological change, investments in capital goods and human capital/resources) have increased productivity in the world
- explain results and issues related to interdependence of personal, national and international economic activities (e.g., natural resource dependencies, economic sanctions, environmental and humanitarian issues) in the modern world (1500 A.D. to present) and the United States (Reconstruction to present):
  - analyze how economies of nations around the world (e.g., China, India, Japan) affect and are affected by American economic policies

Big Idea: Geography

Geography includes the study of the five fundamental themes of location, place, regions, movement and human/environmental interaction. Students need geographic knowledge to analyze issues and problems to better understand how humans have interacted with their environment over time, how geography has impacted settlement and population, and how geographic factors influence climate, culture, the economy and world events. A geographic perspective also enables students to better understand the past and present and to prepare for the future.

Academic Expectations

2.19 Students recognize and understand the relationship between people and geography and apply their knowledge in real-life situations.

High School Enduring Knowledge – Understandings

Students will understand that

- patterns emerge as humans move, settle and interact on Earth's surface, and can be identified by examining the location of physical and human characteristics, how they are arranged, and why they are in particular locations. Economic, political, cultural and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.
- regions help us to see the Earth as an integrated system of places and features organized by such principles as landform types, political units, economic patterns and cultural groups. People vary in how they organize, interpret and use information about places and regions.
- human actions modify the physical environment and, in turn, the physical environment limits or promotes human activities.
- human and physical features of the Earth's surface can be identified by absolute and relative location.
- the use of maps, geographic tools, and mental maps helps interpret information, analyze patterns and spatial data, predict consequences and find/propose solutions to world problems.
- citizens in an interdependent global community impact their physical environments through the use of land and other resources.
- environmental changes and physical and human geographic factors have influenced world economic, political, and social conditions.
- many of the important issues facing societies involve the consequences of interactions between human and physical systems. Complex interrelationships between societies and their physical environments influence conditions locally, regionally and globally.

Big Idea: Geography – Continued

High School Skills and Concepts
Students will

- use a variety of geographic tools (e.g., maps, globes, charts, graphs, photographs, models, data bases, satellite images):
  - analyze the distribution of physical and human features on Earth's surface
  - interpret patterns and develop rationales for the location and distribution of Earth's human features (e.g., available transportation, location of resources and markets, individual preference, centralization versus dispersion)
- investigate regions of the Earth's surface using information from print and non-print sources (e.g., books, films, periodicals, Internet, geographic tools, news media):
  - interpret how places and regions serve as meaningful symbols for individuals and societies (e.g., Jerusalem, Vietnam Memorial, Ellis Island, the Appalachian region)
  - analyze pros and cons of physical (e.g., climate, mountains, rivers) and human characteristics (e.g., interstate highways, urban centers, workforce) of regions in terms of human activity
  - evaluate reasons for stereotypes (e.g., all cities are dangerous and dirty; rural areas are poor) associated with places or regions
  - explain how cultural differences and perspectives sometimes result in conflicts in the modern world (1500 A.D. to present) and United States (Reconstruction to present)
- describe movement and settlement patterns in the modern world (1500 A.D. to present) and United States (Reconstruction to present):
  - analyze the causes of movement and settlement (e.g., famines, military conflicts, climate, economic opportunity) and their impacts in different places and at different times in history
  - explain how technology has facilitated the movement of goods, services and populations, increased economic interdependence, and influenced development of centers of economic activity (e.g., cities, interstate highways, airports, rivers, railroads, computers, telecommunications)
- investigate interactions among human activities and the physical environment in the modern world (1500 A.D. to present) and United States (Reconstruction to present):
  - describe human strategies (e.g., transportation, communication, technology) used to overcome limits of the physical environment
  - interpret and analyze possible global effects (e.g., global warming, destruction of the rainforest, acid rain) of human modifications to the physical environment (e.g., deforestation, mining), perspectives on the use of natural resources (e.g., oil, water, land), and natural disasters (e.g., earthquakes, tsunamis, floods)

Big Idea: Historical Perspective

History is an account of events, people, ideas, and their interaction over time that can be interpreted through multiple perspectives. In order for students to understand the present and plan for the future, they must understand the past. Studying history engages students in the lives, aspirations, struggles, accomplishments and failures of real people. Students need to think in an historical context in order to understand significant ideas, beliefs, themes, patterns and events, and how individuals and societies have changed over time in Kentucky, the United States and the World.

Academic Expectations

2.20 Students understand, analyze, and interpret historical events, conditions, trends, and issues to develop historical perspective.

High School Enduring Knowledge – Understandings

Students will understand that

- history is an account of human activities that is interpretive in nature, and a variety of tools (e.g., primary and secondary sources, data, artifacts) are needed to analyze historical events.
- history is a series of connected events shaped by multiple cause-effect relationships, tying past to present.
- geography and natural resources have a significant impact on historical perspectives and events.
- advances in research, science and technology have a significant impact on historical events, American society, and the global community.

High School Understandings (specific to United States History, from Reconstruction to the Present)

- U.S. History can be analyzed by examining significant eras (Reconstruction, Industrialization, Progressive Movement, World War I, Great Depression and the New Deal, World War II, Cold War, Contemporary United States) to develop chronological understanding and recognize cause-and-effect relationships and multiple causation.
- U.S. History has been impacted by significant individuals and groups.
- each era in the history of the United States has social, political and economic characteristics.
- the role of the United States in the global community has evolved into that of a world power.

High School Understandings (specific to World Civilizations History, 1500 A.D. to the Present)

- world civilizations (e.g., African, Asian, European, Latin American, Middle Eastern) can be analyzed by examining significant eras (Renaissance, Reformation, Age of Exploration, Age of Revolution, Nationalism and Imperialism, Technological Age, 21st Century) to develop chronological understanding and recognize cause-effect relationships and multiple causation.
- world civilizations share common characteristics (e.g., government, belief system, economy) and have been impacted by significant individuals and groups.
- each era in the history of the world has social, political and economic characteristics.
- an increasingly interdependent world provides challenges and opportunities.

Big Idea: Historical Perspective – Continued

High School Skills and Concepts
Students will

- demonstrate an understanding of the interpretative nature of history using a variety of tools (e.g., primary and secondary sources, Internet, timelines, maps, data):
  - investigate and analyze perceptions and perspectives (e.g., gender, race, region, ethnic group, nationality, age, economic status, religion, politics, geographic factors) of people and historical events in the modern world (world civilizations, U.S. history)
  - examine multiple cause-effect relationships that have shaped history (e.g., showing how a series of events are connected)
- analyze how the United States participates with the global community to maintain and restore world peace (e.g., League of Nations, United Nations, Cold War politics, Persian Gulf War), and evaluate the impact of these efforts
- research issues or interpret accounts of historical events in U.S. history using primary and secondary sources (e.g., biographies, films, periodicals, Internet resources, textbooks, artifacts):
  - compare, contrast and evaluate the approaches and effectiveness of Reconstruction programs
  - explain how the rise of big business, factories, mechanized farming, and the labor movement have impacted the lives of Americans
  - examine the impact of massive immigration (e.g., new social patterns, conflicts in ideas about national unity amid growing cultural diversity) after the Civil War
  - explain and evaluate the impact of significant social, political and economic changes (e.g., imperialism to isolationism, industrial capitalism, urbanization, political corruption, initiation of reforms) during the Progressive Movement, World War I and the Twenties
  - evaluate how the Great Depression, New Deal policies, and World War II transformed America socially and politically at home (e.g., stock market crash, relief, recovery, reform initiatives, increased role of government in business, influx of women into workforce, rationing) and reshaped its role in world affairs (emergence of the U.S. as economic and political superpower)
  - analyze economic growth in America after WWII (e.g., suburban growth), struggles for racial and gender equality (e.g., Civil Rights Movement), the extension of civil liberties, and conflicts over political issues (e.g., McCarthyism, U.S. involvement in Vietnam)

Big Idea: Historical Perspective – Continued

- research issues or interpret accounts of historical events in world history using primary and secondary sources (e.g., biographies, films, periodicals, Internet resources, textbooks, artifacts):
  - explain how ideas of the Classical Age (e.g., humanism, developments in art and architecture, literature, political theories, rediscovery of Greco-Roman philosophies) impacted people's perspectives during the Renaissance and Reformation
  - analyze how new ideas and technologies of the Age of Exploration by Europeans brought great wealth to the absolute monarchies and resulted in political, economic and social changes (e.g., disease, religious ideas, technologies, new plants/animals, forms of government) to the other regions of the world
  - investigate how political, social and cultural revolutions (e.g., French, Industrial, Bolshevik, Chinese) brought about changes in science, thought, government, or industry and had long-range impacts on the modern world
  - examine how nationalism, militarism, expansionism and imperialism led to conflicts (e.g., World War I, Japanese aggression in China and the Pacific, European imperialism in Africa, World War II) and the rise of totalitarian governments (e.g., Communism in Russia, Fascism in Italy, Nazism in Germany)
  - analyze the impact of the rise of both the United States and the Soviet Union to superpower status following World War II, development of the Cold War, and the formation of new nations in Africa, Asia, Eastern Europe, and the Middle East
  - examine how countries around the world have addressed the challenges of rapid social, political and economic changes during the second half of the 20th century (e.g., population growth, diminishing natural resources, environmental concerns, human rights issues, technological and scientific advances, shifting political alliances, globalization of the economy)

HIGH SCHOOL TECHNOLOGY

Kentucky Core Academic Standards – Technology – High School

Technology use in the 21st century has become a vital component of all aspects of life. For students in Kentucky to be contributing citizens, they must receive an education that incorporates technology literacy at all levels. Technology literacy is the ability of students to responsibly use appropriate technology to communicate, solve problems, and access, manage, integrate, evaluate, and create information to improve learning in all subject areas and to acquire lifelong knowledge and skills in the 21st century. The Technology Kentucky Core Academic Standards provides a framework for integrating technology into all content areas. It reflects the basic skills required for each student to be competitive in the global economy.

For students to gain the technology competencies, it is essential that they have access to technology during the school day in all grade levels. Instruction should provide opportunities for students to gain and demonstrate technology skills that build primary through grade 12.

The technology content standards should be integrated into each curricular discipline. The purpose of integrating technology is to help students make useful connections between what they learn in each content area and the real world. Technology knowledge, concepts and skills should be interwoven into lessons or units and taught in partnership with other content areas. Technology lends itself to curriculum integration and team teaching. Technology can enhance learning for all students, and for some it is essential for access to learning.

The technology content standards are organized by grade spans: primary, intermediate, middle, and high. Throughout high school, students continue to develop and demonstrate the skills gained from primary, intermediate and middle grade levels. The technology Kentucky Core Academic Standards at the high level includes more opportunities for students to apply technology in their course work, thus becoming more adept in using technology. As the high school curriculum demands more complicated learning tasks, students discover more advanced capabilities in applications. Students will develop an appreciation for the capabilities of technology resources and an understanding of how these can be used for career and lifelong learning. By the end of high school, students will apply technology across all curriculum areas and demonstrate competencies needed for high school graduation.

The technology content standards at the high school grade span are directly aligned with Kentucky's **Academic Expectations**. Technology standards are organized around three Big Ideas that are important to the discipline of technology. The three Big Ideas in technology are: **1) Information, Communication and Productivity; 2) Safety and Ethical/Social Issues;** and **3) Research, Inquiry/Problem-Solving and Innovation**. The Big Ideas are conceptual organizers for technology. Each grade level span ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of *Enduring Knowledge/Understandings* that represent overarching generalizations linked to the Big Ideas of Technology. The understandings represent the desired results--what learning will focus upon and what knowledge students will be able to explain or apply. *Understandings* can be used to frame development of units of study and lesson plans.

Skills and Concepts describe ways that students demonstrate their learning and are specific to each grade level span. The skills and concepts for technology are fundamental to technology literacy, safe use and inquiry. The skills and concepts build on prior learning.

Big Idea: Information, Communication and Productivity

Students demonstrate a sound understanding of the nature and operations of technology systems. Students use technology to learn, to communicate, increase productivity and become competent users of technology. Students manage and create effective oral, written and multimedia communication in a variety of forms and contexts.

Academic Expectations

1.11 Students write using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.16 Students use computers and other kinds of technology to collect, organize, and communicate information and ideas.
3.3 Students demonstrate the ability to be adaptable and flexible through appropriate tasks or projects.
6.1 Students connect knowledge and experiences from different subject areas.
6.3 Students expand their understanding of existing knowledge by making connections with new knowledge, skills, and experiences.

High Enduring Knowledge – Understandings

Students will understand that

- proficient use of emerging technology is needed for competitive entry into the workforce.
- technology allows the exchange of information and ideas to enable participation in the global society.
- collaborative online projects impact life-long learning and global interactions.
- productivity tools are used effectively and efficiently to enhance lifelong learning.

High Concepts and Skills - Information

Students will

- apply, consolidate and extend the skills, knowledge and experiences acquired earlier to exhibit competence in the use of technology
- use appropriate technology terminology
- apply basic care and maintenance when using technology
- explore and analyze the impact of current and emerging technology

High Concepts and Skills – Communication

Students will

- use technology to communicate in a variety of modes (e.g., audio, speech to text, print, media)
- participate in electronic communities (e.g., virtual learning) as learners, initiators, contributors and mentors
- use online collaboration and interactive projects (e.g., email, videoconferencing) to communicate with others (e.g., experts, mentors)
- select and use appropriate technology to collect, analyze present information

High Concepts and Skills – Productivity

Students will

- use and apply a repertoire of technology skills regularly in the preparation of content assignments and authentic projects
- use a variety of formats (web publishing, oral presentations, journals and multimedia presentations) to summarize and communicate the results
- create professional electronic products (e.g., resumes, letters of applications, portfolios) for employment and post-secondary education

Big Idea: Safety and Ethical/Social Issues

Students understand safe and ethical/social issues related to technology. Students practice and engage in safe, responsible and ethical use of technology. Students develop positive attitudes toward technology use that supports lifelong learning, collaboration, personal pursuits and productivity.

Academic Expectations

2.17 Students interact effectively and work cooperatively with the many ethnic and cultural groups of our nation and world.
3.6 Students demonstrate the ability to make decisions based on ethical values.
4.3 Students individually demonstrate consistent, responsive, and caring behavior.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
4.5 Students demonstrate an understanding of, appreciation for, and sensitivity to a multi-cultural and world view.

High Enduring Knowledge – Understandings

Students will understand that

- interactive technology projects and online courses enhance learning to ensure global awareness.
- acceptable social technology practices is essential to post-secondary career choices.
- ethical use of technology is necessary to ensure safety, privacy and legal issues.
- new technology development and deployment creates social, cultural, political and economic issues that requires citizens to make informed decisions.
- positive attitudes and practices towards technology support lifelong learning.
- assistive technology supports learning to ensure equitable access to a productive life.

High Concepts and Skills – Safety

Students will

- explain the importance of safe Internet use (e.g., iSafe skills)
- apply safe behavior when using technology

High Concepts and Skills – Ethical Issues

Students will

- describe intellectual property issues related to technology
- practice responsible, ethical and safe behavior (e.g., security, privacy, passwords, personal information virus protection and iSafe skills) while using technology and adhering to the Acceptable Use Policy (AUP) as well as other state and federal laws
- investigate basic issues related to responsible use of technology and describe personal consequences of inappropriate use
- use legal and ethical practices when completing digital projects/schoolwork and credit all participants for their contribution to the work
- investigate software piracy, its impact on the technology industry and possible repercussions to individuals and/or the school district

High Concepts and Skills – Social Issues

Students will

- forecast the impact of technological products and systems in a global society
- use appropriate etiquette when interacting with global environments (e.g., video conferencing, IM)
- analyze economic, political and cultural issues influenced by the development and use of technology
- investigate how technology supports their interests and career opportunities
- engage with technology to support lifelong learning (e.g., online courses, online assessments, interactive video conferencing)
- describe/ explain how assistive technology supports learning to ensure equitable access to a productive life
- explain how emerging technology is exponential and shapes economic factors and cultural influences

Big Idea: Research, Inquiry/Problem-Solving and Innovation

Students understand the role of technology in research and experimentation. Students engage technology in developing solutions for solving problems in the real world. Students will use technology for original creation and innovation.

Academic Expectations

1.1 Students use reference tools such as dictionaries, almanacs, encyclopedias, and computer reference programs and research tools such as interviews and surveys to find the information they need to meet specific demands, explore interests, or solve specific problems.

2.3 Students identify and analyze systems and the ways their components work together or affect each other.

5.1 Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating, and comparing to solve a variety of problems in real-life situations.

5.2 Students use creative thinking skills to develop or invent novel, constructive ideas or products.

5.4 Students use a decision-making process to make informed decisions among options.

5.5 Students use problem-solving processes to develop solutions to relatively complex problems.

6.1 Students connect knowledge and experiences from different subject areas.

High Enduring Knowledge – Understandings

Students will understand that

- technology supports critical thinking skills used in inquiry/problem solving to make informed decisions for independent learning.
- technology can assist in researching, analyzing and evaluating information obtained from a variety of sources to answer an essential question across all content areas.
- technology supports research and development to solve problems and produce results in authentic situations.
- ideas, solutions and designs (e.g., intellectual property) created through technology are used in a knowledge-based economy.

Big Idea: Research, Inquiry/Problem-Solving and Innovation – Continued

High Skills and Concepts – Research
Students will

- apply a research process model (e.g., Big6, Research Cycle) to conduct online research
- select and evaluate appropriateness of information (authenticity) from a variety of resources, including online research databases, online catalogs/virtual library and web sites to answer the essential questions
- evaluate the accuracy and appropriateness of electronic information and correctly note the appropriate citations (e.g., APA, MLA)
- organize information that is collected using a variety of tools (e.g., spreadsheet, database, saved files)
- manipulate data using charting tools and graphic organizers (e.g., concept mapping, flow charting and outlining software) to connect ideas and organize information
- express and synthesize digital information collected in research effectively and accurately to produce original work (e.g., desktop-published or word-processed report, multimedia presentation, engineering design)

High Skills and Concepts – Inquiry/Problem-solving
Students will

- select and apply technology in content learning to solve authentic problems and make informed decisions
- apply teamwork and critical thinking strategies to solve technology problems
- explain how technology can be used for problem solving and creativity (e.g., simulation software, environmental probes, computer-aided design, geographic information systems, dynamic geometric software, graphing calculators, art and music composition software)
- analyze and troubleshoot software and hardware problems
- investigate and apply expert systems and simulations in real-world situations
- identify open-ended, unresolved problems and select and use appropriate technology to develop solutions
- explore how inquiry/problem-solving impact science, technology, engineering and mathematics (STEM) (e.g., design, programming, robotics)

High Skills and Concepts – Innovation
Students will

- use technology to express creativity in all content areas
- design, develop, publish and present original innovative products (e.g., Web pages, video, robotics, online content)
- produce an innovative product or system using an engineering design process
- collaborate with peers, experts and others to develop solutions and innovative products (e.g., design/CAD, troubleshooting, helpdesk, models, systems)
- recognize that innovative ideas, products and skills lead to intellectual property and copyrights
- describe how technological innovation leads to entrepreneurial opportunities

HIGH SCHOOL VOCATIONAL STUDIES

Kentucky Core Academic Standards – Vocational Studies – High School

Students in the high school vocational studies program develop an understanding of career planning as well as consumer decision-making and financial literacy that will foster life-long learning. The vocational studies program at the high school level develops a career plan. All content teachers are responsible for providing instruction in the vocational studies area. Students need to know the demands of a career and how it will affect their multiple roles in life. While in high school, they should focus on acquiring the knowledge and skills necessary for making successful transitions to college, technical school, military service, and/or work. Students must exhibit those attributes that are valued by employers and demonstrate the techniques for marketing themselves, which will serve them throughout life in a rapidly changing technological society.

The content in vocational studies addresses strategies for choosing and preparing a career, skills and work habits that lead to success in future schooling and work, and skills such as interviewing, writing résumés, and completing applications that are needed for acceptance into college, or other post-secondary training or to the workforce. Vocational studies at this level enable students to acquire the consumer skills and planning of careers. The challenge is to empower students to make a successful transition from school to the world of work, from job to job, across the career life span, and to be productive citizens.

The vocational studies content standards at the high school level are directly aligned with Kentucky's **Academic Expectations**. The vocational studies standards are organized around five "Big Ideas" that are important to the discipline of vocational studies. These big ideas are: Consumer Decisions, Financial Literacy, Career Awareness/Exploration/Planning, Employability Skills, and Communication/Technology. The Big Ideas are conceptual organizers for vocational studies and are the same at each grade level. This ensures students have multiple opportunities throughout their school careers to develop skills and concepts linked to the Big Ideas.

Under each Big Idea are statements of Enduring Knowledge/Understandings that represent overarching generalizations linked to the Big Ideas of vocational studies. The understandings represent the desired results- that focus on learning, and the knowledge students will have to explain or apply. Understandings can be used to frame development of units of study and lessons plans.

Skills and concepts describe the ways students demonstrate their learning and are specific to each grade level. The skills and concepts for Vocational Studies are fundamental to career planning and builds on prior learning.

Academic Expectations 2.36, 2.37 and 2.38 bring forward the career planning in Vocational Studies. Vocational Studies provide a connection to Kentucky's Learning Goals 3 (become self-sufficient individuals) and Learning Goal 4 (become responsible group members). These connections provide a comprehensive link between essential content, skills and abilities important to learning.

Big Idea: Consumer Decisions

Individual and families need to make consumer decisions due to the numerous products/services on the market, multiple advertising techniques, and the need to make responsible financial management decisions. Accessing and assessing consumer information, comparing and evaluating products and services, provides basis for making effective consumer decisions. Consumer decisions influence the use of resources and the impact they have on the community and environment.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions. Students demonstrate the skills to evaluate and use services and resources available in their community.
4.4 Students demonstrate the ability to accept the rights and responsibilities for self and others.
5.4 Students use a decision-making process to make informed decisions among options.

High School Enduring Knowledge – Understandings

Students will understand that

- social factors and economic principles impact consumer decisions.
- consumer decisions are impacted by the global economy, national trends, societal issues, family and economic principles.
- culture, media and technology can influence consumer decisions.
- consumer management practices relating to the human, economic, and environmental resources are needed to meet the goals for individuals and families.
- consumer advocacy groups impact consumer's rights and responsibilities.
- consumer actions influence the use of resources and the impact they have on the environment.
- a variety of print and electronic resources are available in the home, school, and community that provide health and safety information.

Big Idea: Consumer Decisions – Continued

High School Skills and Concepts
Students will

- evaluate social factors and economic principles and their impact on consumer decisions by:
  - explaining how buying and selling practices impact consumer decisions
  - examining the use of economic principles and resources in making choices to satisfy needs and wants of individuals and families
  - comparing and contrasting the selection of goods and services by applying effective consumer strategies
  - recognizing the relationship between supply and demand and their role in meeting consumer needs
- analyze consumer decisions and how they impact the global economy, national trends, societal issues, family and economic principles by:
  - analyzing interrelationship between the economic system and consumer actions
  - explaining practices that will assist families to achieve and maintain economic self-sufficiency
- investigate how culture, media and technology impact the family and consumer decision making by:
  - comparing and evaluating products and services based on major factors (e.g. price, quality, availability, warranties, comparison shopping, impulse buying, features, peer pressure, culture, technology) when making consumer decisions
  - analyzing and evaluating ways consumer's buying practices are influenced by peer pressure, desire for status and advertising techniques (e.g., jingles/slogans, plain folks, magic ingredients, facts and figures, glittering generalities, endorsement/testimonial, bandwagon, snob appeal, emotional appeal, free gifts/rewards)
  - comparing and contrasting the relationship of the environment to family and consumer resources
- evaluate management practices (e.g., budgeting, time management, decision-making) of individual and families relating to food, clothing, shelter, health care, recreation and transportation
- examine economic impacts of laws and regulations that pertain to consumers and providers of services and explain how consumer rights and responsibilities are protected (e.g., government agencies, consumer protection agencies, consumer action groups)
- evaluate consumer actions (e.g., reuse, reduce, recycle, choosing renewable energy sources, using biodegradable packaging materials, composting) and analyze how these actions impact the environment (e.g., conserving resources, reducing water, air, and land pollution, reducing solid waste, conserving energy, greenhouse effect, slowing global warming) by:
  - describing the influence of environmental factors that positively and negatively affect health
  - researching local, state, national and international environmental issues that address consumption for conservation and waste management practices
- use print and electronic resources from home, school, and community that provide accurate and relevant health information

Big Idea: Financial Literacy

Financial literacy provides knowledge so that students are responsible for their personal economic well-being. As consumers, individuals need economic knowledge as a base for making financial decisions impacting short and long term goals throughout one's lifetime. Financial literacy will empower students by providing them with the knowledge, skills and awareness needed to establish a foundation for a future of financial responsibility and economic independence.

Academic Expectations

2.30 Students evaluate consumer products and services and make effective consumer decisions.
2.33 Students demonstrate the skills to evaluate and use services and resources available in their community.
5.4 Students use a decision-making process to make informed decisions among options.

High School Enduring Knowledge – Understandings

Students will understand that

- management of financial resource practices is needed to meet goals of individuals and families across the life span.
- saving plans (e.g., investments, savings accounts, stocks, bonds) and budgets are economic practices in making financial decisions.
- financial institutions (e.g., banks, brokerage firms, credit unions) provide consumer services that help in achieving financial goals.
- career choice and lifestyle impacts an individual's financial future.
- usage of credit involves risks and responsibilities for an individual's financial future.

High School Skills and Concepts

Students will

- analyze financial management practice, including budgeting, banking (e.g., check writing, balancing a checking account), savings and investments (e.g., advantages and disadvantages of savings accounts, stocks, bonds, mutual funds, certificates of deposit, IRAs, 401Ks) and explain their importance in achieving short and long-term financial goals by:
  - describing the risks and responsibilities associated with using credit (e.g., use of debit and credit cards, establishing and maintaining good credit, cause and effect of bankruptcy)
- create and evaluate a personal spending/savings plan determined by an individual's short- and long-term financial goals
- compare an electronic means of transfer (e.g., debit cards, ATM, automatic deposits/payments) offered by various financial institutions
- develop financial goals for the future based on one's lifestyle expectations and career choices

Big Idea: Career Awareness, Exploration, Planning

Career awareness, exploration and planning gives students the opportunity to discover the various career areas that exist and introduce them to the realities involved with the workplace. Many factors need to be considered when selecting a career path and preparing for employment. Career awareness, exploration and planning will enable students to recognize the value of education, learn how to plan for careers and integrate academic subjects.

Academic Expectations

2.36 Students use strategies for choosing and preparing for a career.

2.37 Students demonstrate skills and work habits that lead to success in future schooling and work. Students demonstrate skills such as interviewing, writing resumes, and completing applications that are needed to be accepted into college or other postsecondary training or to get a job.

5.4 Students use a decision-making process to make informed decision among options.

High School Enduring Knowledge – Understandings

Students will understand that

- career choices impact life-long earning potential, career opportunities and job satisfaction.
- jobs/careers reflect both individual and societal needs and vary within communities and regions.
- resources are available in planning for an occupation in a career cluster.
- academic and technical skills in a variety of jobs are transferable and have commonalities.
- an Individual Learning Plan (ILP) is an academic and career planning tool.
- the transition process is continuous and focuses on post school outcomes.
- life-long learning in a global society is important for personal and professional growth.

High School Skills and Concepts

Students will

- analyze and evaluate why people need to work and how a person's career choice impacts life long earning potential, career opportunities, and job satisfaction
- explain how jobs/careers reflect both individual and societal needs by:
  - comparing and contrasting the many factors (e.g., family, environment, location) that must be considered when selecting and preparing for employment or a career path
- analyze the direct relationship of academic/technical skills, extracurricular activities, and community experiences to career preparation by:
  - researching career choice through the use of technology
  - evaluating job and career opportunities (e.g., veterinarian, sales associate, interior designer, meteorologist, physical therapist) in career clusters (e.g., Agriculture, Arts & Humanities, Business & Marketing, Communications, Construction, Education, Health Science, Human Services, Information Technology, Manufacturing, Public Services, Science & Mathematics, Social Sciences, Transportation) that vary within and among communities and regions
- create an educational plan that can impact their future career opportunities by:
  - accessing and evaluating resources for locating job/career information career paths related to interests, aptitude (e.g., academic skills), and abilities
  - updating and maintaining an Individual Learning Plan (ILP) to explore self-knowledge and academic aptitude and understand that career paths should relate to your individual traits (e.g., interests, abilities, learning styles, achievements, career goals)
  - explaining with examples postsecondary options (e.g., community technical colleges, 4-year colleges, military service) used when developing career goals that are included in the Individual Learning Plan (ILP)
- analyze how the changing roles of individuals and the workplace relate to the new opportunities for careers in a global society
- analyze how life-long learning in a global society is important for personal and professional growth

Big Idea: Employability Skills

Employability skills will focus on student's competencies with their work habits and academic/technical skills that will impact an individual's success in school and workplace. School-to-work transition skills will help students develop interpersonal skills and positive work habits.

Academic Expectations

2.36 Students use strategies for choosing and preparing for a career.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
2.38 Students demonstrate skills such as interviewing, writing résumé and completing applications that are needed to be accepted into college or other postsecondary training or to get a job.
3.6 Students demonstrate the ability to make decisions based on ethical values.

High School Enduring Knowledge – Understandings

Students will understand that

- interpersonal skills impact individual's career choice and success in the workplace.
- employability skills are important to achieve success in the workplace.
- academic and technical skills prepare them for obtaining, maintaining, advancing and changing employment.
- team skills are essential in achieving success in the workplace.

Big Idea: Employability Skills – Continued

High School Skills and Concepts
Students will

- analyze how interpersonal skills impact individual's career choice and success in the workplace by:
  - identifying effective group interaction strategies (e.g., communicating effectively, conflict resolution, compromise) to develop team skills (e.g., goal-setting, questioning, dividing work)
  - analyzing and evaluating the role of each participant's contribution in a team setting
  - evaluating the importance of working cooperatively with people of diverse backgrounds and abilities to achieve success in the workplace
  - designing a plan for working cooperatively with others by contributing ideas, suggestions and efforts to complete a task
  - explaining how effective verbal and nonverbal communication skills impacts work-related situations
- evaluate how employability skills are important to achieve success in the workplace by:
  - demonstrating leadership skills by participating in co/extra-curricular activities, home, school and community
  - analyzing the leadership qualities of a successful person and explain how the qualities described are essential to successful employment in any career (e.g., self-directed, effective at time management, problem-solving skills, positive attitude)
  - evaluating personal attitudes and work habits that support career retention and advancement
  - describing consequences for actions when disobeying rules and routines at the workplace
  - explaining the role of authority in school and the workplace
  - explaining the importance of developing good work ethics/habits (e.g., initiative, time management, respect, self-discipline, problem-solving) that support career retention and advancement
- examine how academic and technical skills prepare them for obtaining, maintaining, advancing and changing employment by:
  - using technology to research job/careers in the community
  - explaining how success in an academic course of study could contribute to the achievement and success in employment (e.g., Physical Education/Personal Trainer, Arts and Humanities/Musician)
  - explaining how success in an technical course of study could contribute to the achievement and success in employment (e.g. Information Technology/Programmer, Communications/Broadcast Technician)
  - demonstrating the relationship between academic achievement and how it effects success in the workplace by creating or evaluating an Individual Learning Plan (ILP)

Big Idea: Communication/Technology

Special communication and technology skills are needed for success in schooling and in the workplace. Students will be able to express information and ideas using a variety of technologies in various ways.

Academic Expectations

1.16 Students use computers and other kinds of technology to collect, organize, and communicate information and ideas.
2.37 Students demonstrate skills and work habits that lead to success in future schooling and work.
2.38 Students demonstrate skills such as interviewing, writing resumes, and completing applications that are needed to be accepted into college or other postsecondary training or to get a job.

High School Enduring Knowledge – Understandings

Students will understand that

- scientific and technological advancements can impact careers in the global economy.
- technology skills can enhance learning and be used in developing a career plan.
- communication and technological skills are used to seek, obtain and change jobs/careers.

High School Skills and Concepts

Students will

- describe how job market changes have resulted from scientific advancements and the increase use of technology in the global economy
- evaluate the purpose of technology tools (e.g., satellite, automated phone systems, on-line courses, computer-aided drafting (CAD), graphing calculators, spreadsheets, databases, Internet, on-line banking) and multi-media (Internet, digital camera, teleconferencing, debit/credit cards) and analyze how these impact productivity in homes, schools and jobs by:
  - demonstrating how to work cooperatively and collaboratively with peers when using technology in the workplace
  - explaining how technology provides access to information and resources at home, school and the workplace
  - practicing social/work etiquette needed when using telephone/cell phone, Internet and email at home, school and in the workplace
  - continuing to update the Individual Learning Plan (ILP) to provide a focus for transitioning to post school outcomes
  - describing the role of technology within a community in maintaining safe and healthy living environment
  - assessing the availability of emerging technology and the impact that it has on individuals, families, and workplace
- explain how communication and technological skills are used to seek, obtain and change jobs/careers by:
  - examining effective speaking and listening skills used in a job interview
  - applying skills used to seek, obtain, maintain, and change jobs/careers and transition to postsecondary opportunities: conducting a job search, writing letters, completing an application, securing a letter of reference, preparing a résumé, applying interview techniques, and using proper procedures when changing jobs

ADDITIONAL CURRICULUM EXPERIENCES

Military Science
(Junior Reserve Officers Training Corps)

Kentucky high schools are accountable for helping students make a successful transition to work, postsecondary studies and the military. Courses in the military science program or Junior Reserve Officers Training Corps (ROTC) provide high school students with opportunities to develop leadership and management skills they can carry into adult life.

The Junior ROTC program offers training that develops a student's citizenship, self-discipline, character, team-building skills and respect for authority in a democratic society. Students also gain an understanding of national security requirements.

Career counseling and communications skills are combined with problem-solving and logical thinking to aid students in pursuing career paths or choices in the military or other occupations. Integration of knowledge with other core content areas, such as mathematics, science, social studies, health and physical education, is encouraged.

Field experiences, close-order drill, marksmanship training, uniform inspections and ceremonies also are part of the military science program curriculum. The program also stresses hygiene, physical fitness, first-aid and survival skills, and a healthy lifestyle.

Students in these programs receive an introduction to the organization of specific military branches. Four military science programs may be offered in Kentucky high schools: Air Force, Army, Marine and Navy Junior ROTC. The content in each program varies with the nature of the military branch.

World Language

All Kentucky students are expected to be able to communicate effectively in a second language, according to Academic Expectation 2.28. Postsecondary education often expects entering students to have a basic competency in at least one world language. Kentucky students also are expected to be able to demonstrate interculturality: to be able to interact effectively and work cooperatively with the diverse ethnic and cultural groups of our nation and world, interpreting and adapting to different cultures' perspectives, practices and products across languages.

Competency in at least one other world (foreign) language is a vital skill in today's global society. World Language is a term that refers to any language that is not the student's mother tongue. This language could be, for example, American Sign Language, Arabic, Chinese, French, German, Greek, Italian, Japanese, Latin, Spanish and English for Limited English Proficient (LEP) students.

World language learning experiences prepare Kentucky students:

- to enter postsecondary studies with skills on par with students from other states and countries
- to compete in the global marketplace and ensure Kentucky's international and economic vitality
- to interact with Kentucky's increasingly multilingual and multicultural population
- to participate as global citizens in a diverse intercultural and plurilingual society

One of the most important factors influencing development of language proficiency is the amount of time devoted to working in the language. Developing second language skills at the expected level of competency suggests an early start in well-articulated sequences of learning.

All language learning programs should focus on developmentally appropriate experiences that build communicative and cultural competence, support first language literacy, reinforce the core content, offer students meaningful opportunities beyond the classroom, and present an inclusive approach to culture.

In preschool, kindergarten and primary grades, an emphasis is typically placed on the development of oral language and literacy skills in the second language. Instruction is most effective if delivered in the target language while engaging children in language acquisition activities that include conversation, music, games, Total Physical Response and hands-on projects.

Research shows that early language learning increases cognitive development in areas of critical thinking, problem solving, creativity, conceptualization and reasoning. Early language learning also develops literacy skills that transfer to and reinforce the student's first language.

Middle level programs build on this early language learning experience by focusing on language production; increasing content-related, inquiry-based, integrated and thematic learning; introducing career topics and service-learning activities that connect students to the community; and, when possible, allowing students to layer on the learning of yet another language. Language learning at the middle level has been shown to increase students' positive attitudes toward cultural diversity, to facilitate the acquisition of subsequent languages and to build English language skills.

In high school, a variety of language learning opportunities exist to meet diverse student needs. These may include access to a range of study from beginning level through Advanced Placement courses, virtual or distance learning courses, units of study in technical areas (i.e., Spanish for agriculture or medicine, business German), work experience (i.e., in a migrant worker day care facility), dual credit courses (i.e., Arts and Humanities content taught in French at the third- or fourth-year level or in postsecondary courses), international study trips, and performance-based credit.

SPECIAL CONSIDERATIONS

ADDITIONAL TOPICS

Children and Youth with Disabilities

Kentucky expects all students to achieve at high levels and holds schools accountable for providing standards-based curricula and learning experiences that ensure this achievement. Kentucky's Learning Goals and Academic Expectations define a broad framework of what all students, including students with disabilities, should know and be able to do as a result of progressing through an educational course of study in Kentucky's schools. *Kentucky Core Academic Standards for Kentucky Schools P-12* is written to be inclusive of all students. The document contains the minimum content standards for each subject area – primary through high school – including the high school graduation requirements.

A comprehensive curriculum framework, or course of study for children and youth with disabilities, is based on Kentucky's learning goals, academic expectations, the content standards in the *Kentucky Core Academic Standards* and each school's curricula. This course of study also addresses other educational needs that result from the student's disability. The course of study enables students with disabilities to access and participate in the general curriculum. Schools extend and modify curricula for students with disabilities to facilitate attainment of Kentucky's learning goals, academic expectations, the required content standards and each individual student's Individual Education Program (IEP) goals and objectives.

Children and youth with educational disabilities, as defined by federal statutes and regulations, as well as Kentucky Revised Statues and Administrative Regulations, need specially designed instruction. For a student with educational disabilities, the Admissions and Release Committee (ARC) or 504 Committee develops a student's IEP or 504 Plan to support the student's opportunity to learn, to assist a student with disabilities to access the general education curriculum, achieve performance or achievement standards and attain the content standards designed for all students.

The IEP and 504 Plan identify the specially designed instruction, research-based instructional strategies, any special services and accommodations, extensions and modifications needed by an individual student to make sure the student has the supports needed to learn and to earn a diploma or a Certificate of Work Readiness and Employability Program for Students with Disabilities. The IEP and 504 Plan, however, are not a comprehensive curriculum. They are a support system.

For students with disabilities, achieving high levels of learning and being prepared for postsecondary education, work and the community requires alignment of a student's course of study with the knowledge, concepts and skills for each required content area outlined in the *Kentucky Core Academic Standards*. Highly qualified teachers, as defined by state and federal statutes and regulations, must deliver curriculum content. Therefore, planning, designing and delivering the curriculum must be a collaborative effort between general education and special education teachers to assure appropriate instruction for students with disabilities.

At all levels (primary, intermediate, middle level and high school), the curriculum, coursework and standards for students with disabilities shall be aligned with *Kentucky's Academic Expectations*, the content standards outlined in the *Kentucky Core Academic Standards,* and the student's IEP or 504 Plan.

Students with disabilities pursue a course of study leading to a standard diploma or a Certificate of Work Readiness and Employability Program for Students with Disabilities. A brief synopsis of these courses of study follows.

Standard Diploma Course of Study Program

Schools are to provide students with disabilities the opportunity and necessary instructional supports and accommodations to progress through a course of study leading to a standard diploma. Courses include the required content standards as outlined in the *Kentucky Core Academic Standards* for each content area. Students with disabilities who earn the required high school credits through successful completion of content area and elective coursework as described in the *Kentucky Core Academic Standards* and consistent with 704 KAR 3:305 shall be awarded a diploma.

Certificate Program for Students with Disabilities

Until the graduating class of 2012, schools and districts may continue to provide a course of study leading to a certificate recognizing the achievement of students with disabilities whose disabilities preclude a course of study leading to a standard high school diploma. Beginning with the graduating class of 2012, schools and districts shall provide a course of study leading to a certificate. This certificate shall verify a student's successful preparation for transition from high school to work. Districts and schools may provide a course of study leading to such a certificate to students prior to the graduating class of 2012.

For a student whose disability precludes a course of study leading to a standard diploma consistent with the requirements of 704 KAR 3:305, a student's ARC shall determine eligibility for the alternative course of study by documenting that the following criteria are met:

- The student's demonstrated cognitive disability and adaptive behavior itself prevent completing the regular course of study leading to a standard diploma, even with program modifications, adaptations and extended school services;
- The student's current adaptive behavior requires extensive direct instruction in multiple settings to apply and generalize functional and work-readiness skills in school, work, home and community environments;
- The student's inability to complete the course of studies is not the result of excessive or extended absences nor the result of visual or auditory disabilities; specific learning disabilities; emotional behavioral disabilities; or social, cultural or socioeconomic differences;
- The student, when instructed solely or primarily through school-based instruction, is unable to apply academic skills at a minimal competency level in natural settings; and
- The student is unable to acquire, maintain and generalize skills without intensive, frequent and individualized community-based instruction

The ARC makes the decision that a student is eligible for the alternative course of study only after a thorough review and documentation that the student meets the criteria stated above. The ARC must clearly document the decision in the student's records and reflect the course of study in the student's IEP. This decision is reviewed annually by the student's ARC to make sure the decision is still appropriate and that there have not been changes that would enable the student to pursue a standard diploma and achieve the content and performance standards of the standard curriculum/course of study.

At all levels (primary, intermediate, middle level and high school), the curriculum, coursework and standards for students pursuing a work-readiness and employability certificate shall be aligned with *Kentucky's Academic Expectations*, the content standards outlined in the *Kentucky Core Academic Standards* and the student's IEP. The course of study may be adjusted and based on a narrower breadth, depth and complexity of content standards and reflect alternative performance or achievement standards. It must promote access to the standard/general curriculum and provide the opportunity for students to be involved in and to progress in the general education curriculum regardless of where instructional services are provided. The course of study, including the content and achievement standards, must be challenging for the eligible students with disabilities, must support individual growth and must build on the individual student's present level of performance.

There are a variety of ways a student with significant disabilities pursuing this course of study may access the standard/general curriculum. Some options include students participating in:

- curricular activities in the same way as other students
- the same activities but different levels than other students
- the same activities but different educational goals that are embedded into the classroom activities and routines
- a different activity with different goals but related to the classroom activities

Typically this course of study includes a range of curricular options critical to successful transition based on the general/standard curriculum and such life domains as career/vocational (e.g., job exploration, job skills, career and transition planning), recreation/leisure, communication and personal management (e.g., community and daily living). Instruction and student learning is in the context of real-life applications that students experience at school, in the home and community or on the job.

Students with disabilities who complete this course of study are not eligible for a standard diploma as defined in 704 KAR 3:305.

Programs for Students with Limited English Proficiency (LEP)

Kentucky offers equal educational opportunities for all students identified as Limited English Proficient (LEP) across all grade levels, primary through grade 12, as outlined by Title VI of the federal Civil Rights Act of 1964, and Title I and Title III of the federal No Child Left Behind Act of 2001. The term “limited English proficient” is used for a student aged 3 through 21 who was not born in the United States or whose native language is a language other than English or who comes from an environment where a language other than English has significantly affected the student’s ability to meet Kentucky’s proficient level of achievement on state assessments or the student’s ability to achieve success in classrooms where the language of instruction is English.

Schools and districts must provide students with limited English proficiency the educational opportunities to meet the same standards for academic performance expected for all Kentucky children and to participate in the same range of course offerings and content as all Kentucky students. A comprehensive curriculum framework or course of study for students with limited English proficiency will promote language and cognitive development and include consideration of a student’s native language and cultural background.

To ensure that students with limited English proficiency have access to the school’s curriculum, an alternative language program that is recognized by experts in the field may be provided. The alternative language program should effectively implement the educational theory adopted by the school and demonstrate success in helping students overcome language barriers.

School personnel are allowed flexibility in designing the educational program, interventions and instructional strategies necessary to meet the unique needs of students with limited English proficiency based on proven practices in second language acquisition. Models for delivering the course of study may include alternative language programs: English as a Second Language (ESL), sheltered instruction in English or content-based programs, structured immersion programs, bilingual programs and modified general education classes. Other models that meet the above Office for Civil Rights criteria also may be considered.

Schools shall provide students with limited English proficiency the opportunity and necessary instructional and program supports, including necessary accommodations, to progress through a course of study leading to a high school diploma. Students with limited English proficiency may pursue a course of study in an alternative language program leading to a high school diploma if the alternative course of study includes the minimum rigorous content standards defined in the *Kentucky Core Academic Standards* for each content area. In high school programs, English as a Second Language may be offered for credit in accordance with these requirements.

Students with limited English proficiency may pursue a course of study leading to a diploma in one or a combination of the following ways:

- completion of at least 22 credits as described in 704 KAR 3:305 and the *Kentucky Core Academic Standards*; or
- completion of 22 credits based on submission by a local board of education of an integrated, applied, interdisciplinary, or higher level course for a required course if the alternative course provides rigorous content and addresses the same academic expectations and same applicable components of 703 KAR 4:060. For the graduating class of 2012 a technical/occupational course may also be considered as an alternative.

Programs for the Gifted and Talented

Kentucky offers educational services for all students across all grade levels, primary through grade 12, who are identified as gifted and talented as outlined in Kentucky Revised Statute (KRS) 157.230 (Programs for Exceptional Children). “Gifted and talented” is defined as a student identified as possessing potential or demonstrated ability to perform at an exceptionally high level in general intellectual aptitude, specific academic aptitude, creative or divergent thinking, psychosocial or leadership skills, and/or the visual or performing arts.

Students who are gifted and talented have special learning needs that are commonly addressed through curricula modifications such as differentiation, resource services or advanced placement courses. A student, primary through grade 12, who is identified as possessing gifted characteristics, behaviors or talents shall be provided services articulated with the general education program. They include curricular and instructional experiences matched to the specific interests, needs, age and abilities of the student and accommodate the different types of giftedness. Differentiation may require modifying the complexity, depth, and pace of the curriculum. These services and learning experiences are designed to supplement and build on the required content standards, including the enduring knowledge, concepts and skills for each content area in the Kentucky Core Academic Standards. They are generally differentiated to meet the needs of the student, often providing opportunities for students to enrich comprehension of the curriculum, construct multiple connections among content areas and pursue content deeply. These experiences also provide for continuous progress. For students in the primary program, services shall be provided within the framework of the primary program and the primary talent pool.

For students in grades 4-12 who are formally identified, districts and schools must provide service options outlined in a student’s Gifted Student Services Plan (GSSP) consistent with the requirements of 703 KAR 3:285.

Career and Technical Education

Career and Technical Education is an essential component of the high school curriculum. It is critical in meeting the needs of all students in academic achievement, career exploration, career preparation and leadership development. Career and Technical Education assists schools in providing students with skills necessary for a successful transition to postsecondary education, the work place or military and a desire for lifelong learning in a global society.

High-quality career and technical programs prepare students for further study at the postsecondary level in a technical field or for successful entry into the work force after high school graduation. These programs are in the areas of Agriculture, Business, Family and Consumer Sciences, Health Science, Information Technology, Industrial Education, Marketing, Pathway to Careers and Technology Education.

The major components of Career and Technical Education programs include the following:

- career advising and guidance to help all students develop the state-required Individual Learning Plan
- career pathways in which sequences of rigorous, academic, and career and technical courses are aligned with career clusters and linked to postsecondary education
- occupational Skill Standards and Assessments to identify and measure skills determined most critical by business and industry (Industry-recognized occupational skill standard certificates endorsed by business and industry will be awarded to students who meet certification requirements.)
- instructional content aligned with academic expectations and state or national occupational skill standards recognized by business and industry
- career and Technical student organizations (CTSO), which are integral parts of the specific program areas and available to all students enrolled
- work-based learning opportunities such as cooperative education or internships relevant to the programs in which students are enrolled and to their career goals
- real-world contextual learning experiences that provide students with increased opportunities to apply academic content within a career area
- opportunity for students to earn certificates upon completing four credits in a career major or completion of specified tasks within a career area

High school graduation requirements allow for interdisciplinary or applied courses to substitute for specific academic courses required for graduation. This option provides high schools the opportunity to offer courses that have the same academic rigor and include the required content standards for specific content areas as traditional courses but deliver the content through more contextual, hands-on approaches.

Several interdisciplinary courses that meet the high school graduation requirements have been developed in Career and Technical Education. Any high school, career and technical center, or area technology center would be eligible to offer interdisciplinary courses.

Career and Technical Student Organizations provide a unique program of career and leadership development for middle level and high school students enrolled or who have been enrolled in Career and Technical Education programs. A CTSO is a powerful instructional tool when integrated into the classroom by a Career and Technical Education teacher committed to the development of the total student. Organized activities provide opportunities for students to gain personal and leadership skills that help make them more employable, prepare them to become productive citizens and assist them in assuming positive roles in home and community.